Counterpart®

Counting Scale Indicator
Version 2.3

User Manual

RICE LAKE®
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To be the best by every measure®

118677 Rev C

Contents

1.0 Introduction 2
1.1 Standard Features 2
1.2 Capacities and Resolutions 2
1.3 Modes of Operation 2
1.3.1 Description of Modes of Operation 2
1.4 Keypad Functions 3
1.5 Tare Recall 4
1.6 Annunciator Symbols 4
1.7 Softkey Setup 5
1.8 How to Use AlphaNumeric Keypad 5
1.9 Indicator Operations 5
2.0 Installation 7
2.1 Unpacking 7
2.2 Scale Base Assembly (if purchasing the scale base separate from indicator) 8
2.2.1 Locking and Unlocking - S-XL Scale Base 8
2.2.2 Locking and Unlocking - S-YC Scale Base 8
2.2.3 Leveling 9
2.3 Enclosure Disassembly 9
2.4 Cable Assembly Instructions 9
2.5 Making Power Connections 10
2.6 Load Cell Wiring 10
2.6.1 Dual Channel Units (S-XD Base) 11
2.6.2 Dual Channel – Remote Scale Setup 11
2.7 Wire Specifics 11
2.8 Cable Grounding 12
2.8.1 Serial Communications 12
2.8.2 Digital I/O 13
2.8.3 Network Connection to Counterpart 13
2.9 Enclosure Reassembly 13
2.10 CPU Board Removal 13
2.11 CPU Board Battery Replacement 14
2.12 Field Installation of Battery 14
2.13 Installing Option Cards 15
2.13.1 USB Option Card Installation 16
2.14 Bracket Assembly Connecting Indicator to Scale Base 17
2.15 Indicator Replacement Parts and Assembly Drawings 19
3.0 Configuration 22
3.1 Front Panel Configuration 22
3.2 Menu Navigation 22
3.3 Revolution Configuration 23
3.4 ID Menu 24
3.5 Audit Menu 25
3.6 Calibration Menu 26
3.7 Setup Menu 27
3.7.1 Scale Menu 28
3.7.2 Feature Menu 34

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3.7.3 Serial Menu . . . 42
3.7.4 Ethernet Menu . . . 44
3.7.5 Print Format Menu . . . 45
3.7.6 Scale Setpoints Menu . . . 46
3.7.7 DIG I/O Menu . . . 50
3.7.8 Version Menu . . . 51
3.8 Test Menu . . . 51
3.9 Display Menu . . . 52
3.10 Setpoints – Weigh Mode Parameter Menu . . . 53
4.0 Calibration . . . 55
4.1 Front Panel Calibration . . . 55
4.2 Five-point Linearization . . . 56
4.3 Rezero . . . 56
4.4 EDP Command Calibration . . . 56
4.5 Revolution® Calibration . . . 57
4.6 More About Calibration . . . 58
4.6.1 Adjusting Final Calibration . . . 58
5.0 Scale Operations . . . 59
5.1 Weight Unit Switching . . . 59
5.2 Entering Tare Weights . . . 59
5.2.1 One-Touch Tare, Tare Unknown . . . 59
5.2.2 Digital Tare, Tare Weight Known . . . 59
5.3 Toggling Between Gross and Net . . . 60
5.4 Entering Unit Weights . . . 60
5.4.1 Unit Weight Operation by Sampling . . . 61
5.4.2 Unit Weight Operation by Key Entry . . . 61
5.5 IDs . . . 62
5.5.1 Setting an ID Using the Normal Mode . . . 63
5.5.2 Using a Stored ID . . . 63
5.5.3 Using ID/Codes that are not Stored . . . 63
5.5.4 Clearing ID Codes . . . 64
5.5.5 Adding an ID From Count Mode . . . 64
5.5.6 Adding an ID Through Revolution . . . 64
5.6 WeighVault . . . 65
5.6.1 Demo Setup of Counterpart and WeighVault . . . 65
5.6.2 Using WeighVault . . . 66
5.7 Totalization Counts . . . 67
5.8 Parts Reduction Counts . . . 68
5.9 Accumulate Feature For Weight . . . 68
5.9.1 Printing the Accumulated Total . . . 68
5.9.2 Clearing the Accumulated Total . . . 68
5.9.3 IN/OUT Softkeys . . . 68
5.10 Batch Operations . . . 69
5.11 Connecting a Barcode Scanner . . . 71
5.12 USB Keyboard . . . 71
6.0 Serial Commands . . . 72
6.1 The Serial Command Set . . . 72
6.1.1 Key Press Commands . . . 72
6.1.2 ID Commands . . . 73
6.1.3 Reporting Commands . . . 73
6.1.4 Clear and Reset Commands . . . 74
6.1.5 Parameter Setting Commands . . . 74
6.1.6 Normal Mode Commands . . . 78
6.1.7 Unique Commands . . . 78

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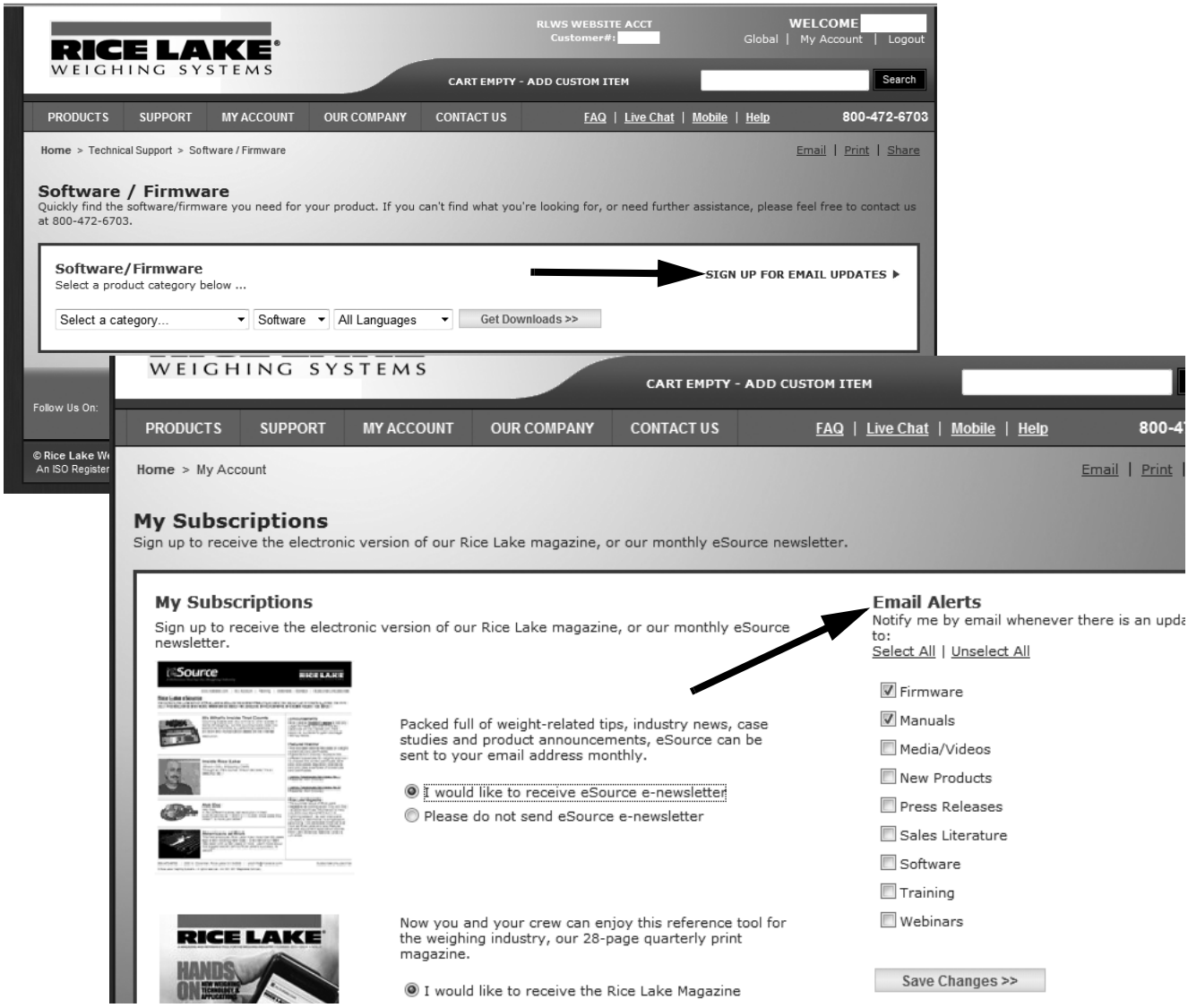
7.0 Print Formatting 79
7.1 Print Formatting Commands. 79
7.2 Customizing Print Formats 83
7.2.1 Using the EDP Port 83
7.2.2 Using the Front Panel 83
7.2.3 Using Revolution® 84
7.2.4 Print Label Examples 84
8.0 WLAN Installation Instructions 88
8.1 Enclosure Disassembly 88
8.2 WLAN Card Installation 88
9.0 Appendix 89
9.1 Error Messages 89
9.2 Using the XE and XEH EDP Commands 90
9.2.1 Using the P EDP Command 90
9.3 Continuous Output (Stream) Format 91
9.4 Demand Output Serial Data Format 91
9.5 Custom Stream Formatting. 91
9.6 Digital Filtering. 94
9.6.1 DIGFL*x* Parameters. 94
9.6.2 DFSENS and DFTHRH Parameters. 94
9.6.3 Setting the Digital Filter Parameters. 95
9.6.4 Audit Trail Support 95
9.7 USB Keyboard Interface 96
9.8 Serial Scale Interface 96
9.9 Regulatory Mode Functions 97
9.10 Regulatory Mode and Legal-for-Trade (LFT) 98
9.10.1 Legal for Trade and Normal Weight Mode. 98
9.10.2 Legal for Trade and Totalization Mode 99
9.11 Updating Firmware 99
9.12 Specifications. 101
9.13 Specifications. 102

About This Manual

This manual is for trained and qualified installers of counting scales and represents the correct, safe and recommended methods for setting up and using the *Counterpart*®.

This manual can be viewed and downloaded from the Rice Lake Weighing Systems web site at www.ricelake.com. Rice Lake Weighing Systems is an ISO 9001 registered company.

Note *For the latest downloads available, sign up for email updates on the Rice Lake Weighing Systems web site at http://www.ricelake.com/software.aspx.*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1. For registered users, simply click on the Support tab on the RLWS home page and select software/ firmware.
2. Select ***SIGN UP FOR EMAIL UPDATES*** as shown on the left side graphic above.
3. Select the number of boxes you wish to receive email alerts on and press ***SAVE CHANGES***.

1.0 Introduction

The *Counterpart* offers practical solutions for a full range of precision counting applications. A bright LCD display enables operators to easily view quantities, alphanumeric text messaging displays, part numbers to verify descriptions, and correct part called from memory. One hundred and fifty item memory and two RS-232 ports and Ethernet enable the *Counterpart* to provide real-time data collection and position it for the future growth of your business. Multiple scales can be connected to the *Counterpart*, as well as an RS-232 bar code scanner and external printer. When portability is required, choose the battery operation option of the *Counterpart* with up to 24 hours of continuous use for mobile workstations, outdoor applications, and rental fleets. It's built to withstand transport from one area of the plant to another or from one business to the next. Simply connect a printer via RS-232 for labeling, ticketing, or receipt tasks.

1.1 Standard Features

Counterpart offers a variety of standard features:

- AC operated (battery operation is optional)
- Lb, kg, g, oz weight display conversion
- Single- or dual-channel models with serial scale
- Two RS-232 ports for peripheral connections (with one port also supporting 20 mA transmit)
- On board Ethernet capability
- Scanner input (using RS-232 port)
- Revolution software utility for setup
- 150 item memory

1.2 Capacities and Resolutions

Table 1-1 lists the scale capacities and resolutions for all part numbered models of the *Counterpart*.

Counting scales specify two types of resolution:

- Weight (or external) resolution
- Counting (or internal) resolution

Weight resolution is displayed in divisions of the full scale capacity, which is divided into weight increments. For example, a 5 lb scale divided into 10,000 display divisions would display weight with 0.0005 lb divisions (10,000 divisions x 0.0005 lb = 5.0 lb).

Counting resolution is based on the internal resolution of the scale. The default weight and counting resolutions for the *Counterpart* capacities are shown below.

Platform Capacity	Weighing Resolution	Counting Resolution	Platform Dimensions
5.0 lb (2 kg)	0.0005 lb (0.0002 kg)	0.000005	9 in. x 12 in.
10 lb (5 kg)	0.001 lb (0.0005 kg)	0.00001	11 in. x 16 in.
25 lb (10 kg)	0.002 lb (0.001 kg)	0.00002	
50 lb (20 kg)	0.005 lb (0.002 kg)	0.00005	
100 lb (50 kg)	0.01 lb (0.005 kg)	0.0001	

Table 1-1. Counterpart Capacities

1.3 Modes of Operation

1.3.1 Description of Modes of Operation

- Count Mode – where all the basic weighing and counting operations are performed.
- Setup Mode – where item data can be programmed into the memory of the scale.

1.4 Keypad Functions

Key	Function
POWER	Turns the *Counterpart* unit on/off. **Note** ***If the PC1 jumper is set to SW, the* POWER *button must be used to turn the unit on and off. If the PC jumper is set to ON, the unit will automatically power on when it's plugged in and the only way to turn it off is to unplug power.***
MENU SETUP	Enters Menu mode, allowing configuration if the Audit jumper is in the "ON" position. Also used as an escape key in Menu mode.
	Sets the current gross weight to zero, provided the amount of weight to be removed or added is within the specified zero range and the scale is not in motion. The zero band is defaulted to 1.9% of full scale, but can be configured for up to 100% of full scale. **Note** ***1.9% is required for legal-for-trade applications.***
UNIT WEIGHT	Used to enter a known unit weight of a part. Up to 10 characters may be entered including zero.
	Sends "on-demand" serial information out the serial port, provided the conditions for standstill are met.
	Performs one of several predetermined Tare functions dependent on the mode of operation selected in the TAREFN parameter. To view a stored tare, see Section 1.5. Also acts as the **ENTER** key.
	Allows the display to change between gross mode and net mode.
	Used for computing the unit weight by sampling. Press the **SAMPLE** key after placing a sample on the platform or after using the numeric keypad to enter the sample size. The default sample size is 10.
UNITS TOGGLE	Switches the weight display to an alternate unit. The alternate unit is defined in the Setup Menu and could be kg, g, lb, oz.
	Clear key. Used to backspace on entries.
Alpha-Numeric keypad	Used to enter values directly. Press keys for lower and upper case alpha characters. See Figure 1-1 on page 4

Table 1-2. Keypad Functions

Figure 1-1. Numeric Keypad

Additional Keypad Symbols

Additional symbols can be accessed by pressing the following keys.

Key	Symbol
1	<
	>
	-
	+
	*
	$
	/
	%
	"
0	*
. (period)	space

Table 1-3. Additional Keypad Symbols

1.5 Tare Recall

When a stored tare is displayed, Net annunciators will be turned on. To display a stored tare,

1. Set up a softkey (see Softkey Setup in Section 1.7 on page 5).
2. Press the ***DISPLAY TARE*** softkey.
   The tare value will be displayed. If there is no tare in the system, pressing the **TARE** key will have no effect. The Gross/Net annunciators are not lit and a value is displayed in weight display area.

1.6 Annunciator Symbols

Annunciator	Description
→0←	**Zero (Center of Zero)** While in gross weight display mode, this LED indicates that the current displayed weight reading is within +/-0.25 display divisions of the acquired zero, or is within the center of zero band. When in the net weight display mode, it indicates that the current net weight reading is within +/-0.25 display divisions of the center of net zero. A display division is the resolution of the displayed weight value, or the smallest incremental increase or decrease that can be displayed or printed.
G/B	Gross weight mode (or Brutto in OIML mode)
N	Net weight display mode
	Indicates the level of the battery.
	Scale is at standstill or within the specified motion band. Some operations, including tare functions and printing, can only be done when the standstill symbol is shown.

Table 1-4. Annunciator Symbols

1.7 Softkey Setup

Softkeys offer additional ways to access features associated with the *Counterpart*. To access the softkey setup parameter, go to ***Menu/Setup/Config/Feature/Softkeys***.

Select information for each softkey and press **TARE (Enter)** key after each entry and then press **SaveExit** softkey. To exit back out of the unit, press the **MENU SETUP** key twice without saving changes.

Softkeys set for either Display Tare or Display Accum will automatically time out and revert to the normal active display after 10 seconds.

1.8 How to Use AlphaNumeric Keypad

Counterpart has the ability to use alpha characters along with numeric characters. Use the following steps to change to alpha characters:

1. Select a key labeled with the value desired.
2. Push until the desired value appears, e.g. 2 abcABC.
3. Move to the next letter and push until that value appears.
4. If the next letter is the same key, push the right arrow (PRINT) to move over to the next selection.
5. When complete, push **TARE(Enter)** to save.

1.9 Indicator Operations

Basic *Counterpart* operations are summarized below.

Toggle Gross/Net

Press the **GROSS/NET** key to switch the display mode from gross to net or from net to gross. If a tare value has been entered or acquired, the net value is the gross weight minus the tare. If no tare has been entered or acquired, the display remains in gross mode.

Gross mode and net mode is indicated by the annunciator on the display.

Toggle Units

Press the **UNITS TOGGLE** key to switch between primary, secondary, and tertiary units.

Zero Scale

1. While in gross mode, remove all weight from the scale and wait for the standstill annunciator (◣ ◢).
2. Press the **ZERO** key. The zero annunicator is displayed to indicate the scale is zeroed.

Acquire Tare

1. Place a container on the scale and wait for the standstill annunicator (◣ ◢).
2. Press the **TARE** key to acquire the tare weight of the container.
3. The ***Net*** annunciator will be enabled.

Remove Stored Tare Value

1. Remove all weight from the scale and wait for the ***standstill*** annunciator (◣ ◢).
2. Press the **TARE** key. The display shifts to gross weight and the Gross annunciator is displayed.

Keyed Tare

1. Key in the value of the container.
2. Press the **TARE** key.
3. The ***Net*** annunciator is displayed.

Print

Press the **PRINT** key to print either the Gross, Net, Total or Count format.

The default format is a 2.25 x 4.5 inch label.

1. Wait for standstill annunciator (◣ ◢).
2. Press **PRINT** key to send data to the serial port.

If the standstill annunciator is not present, the **PRINT** key command is executed if the scale comes out of motion within three seconds.

Set Date and Time

1. If the softkey is enabled, push the softkey. The current value is displayed.
2. To change, use the Up/Down arrows to highlight the value to change.
3. Press the **TARE** key to save and exit.

Set Serial Scale (Scale 3)

1. Select Port 1 — Indust Scale.
2. Match the baud rates. Upon doing this it automatically becomes Scale 3.

Setting up a Softkey

To set up a softkey, use the following steps:

1. Press the **MENU SETUP** key.
2. Navigate through the menu setup to Setup using the ▷ key.
3. Press ▽ to navigate to ***CONFIG.***
4. Press ▽ to navigate to ***SCALES.***
5. Press ▷ to navigate to ***FEATURE.***
6. Press ▽ to navigate to ***COUNT.***
7. Using ▷ scroll through until you get to ***SOFTKEYS***.
8. Scroll down. Then using ◁ ▷ scroll through menu selections SK1 through SK12.
9. Press ▽ to assign a softkey to that position.
10. Select a choice that you wish to be displayed.
11. Press △ once the function is selected.
12. Press **Save/Exit** softkey.

2.0 Installation

Counterpart is available in different configurations from just the indicator display to the display and counting scale combined together as a unit. This section contains instructions on unpacking and assembly, leveling, making power connections, load cell wiring, wiring standard serial port, optional network communications, wiring optional digital outputs, optional backup battery operation, and power-up sequence. Assembly drawings and replacement parts lists are also included.

Important *Do not pick up the counting scale by the "spider" assembly, which supports the platter. Lifting by the spider may damage the load cell. Lift the scale from under the base to move it.*

2.1 Unpacking

The *Counterpart* comes with the following components and comes pre-assembled from the factory.

Counterpart Indicator Display

- AC adapter
- This manual
- Indicator head

Scale Base

- Scale base
- Weighing platform
- Bracket assembly

Note *If purchasing a different scale base, a separate plastic bag with wiring components comes with the scale base but is not needed and can be set aside.*

Note *Store the packing material and box in a safe, easily accessible place. Should you ever need to transport the scale across any substantial distance, using the original packing material is the first step in protecting your investment.*

Immediately after unpacking the scale, visually inspect the *Counterpart* to ensure all components are included and undamaged. If any parts were damaged in shipment, notify Rice Lake Weighing Systems and the shipper immediately.

2.2 Scale Base Assembly (if purchasing the scale base separate from indicator)

Important *Do not turn the scale upside down. Always work with the scale on its side. Damage to the load cell can occur if the scale is turned upside down.*

Set up the scale on a stable, level surface.

2.2.1 Locking and Unlocking - S-XL Scale Base

The Counterpart S-XL scale base is delivered in a locked position to prevent damage to the load cells during shipment. The scale base uses either one setscrew for the single-platform scale or two setscrews for the dual-platform scale. The setscrews are located on the bottom of the base and must be removed before the scale is put into service. Use the following procedure to unlock the scale base.

1. Turn the scale on its side.

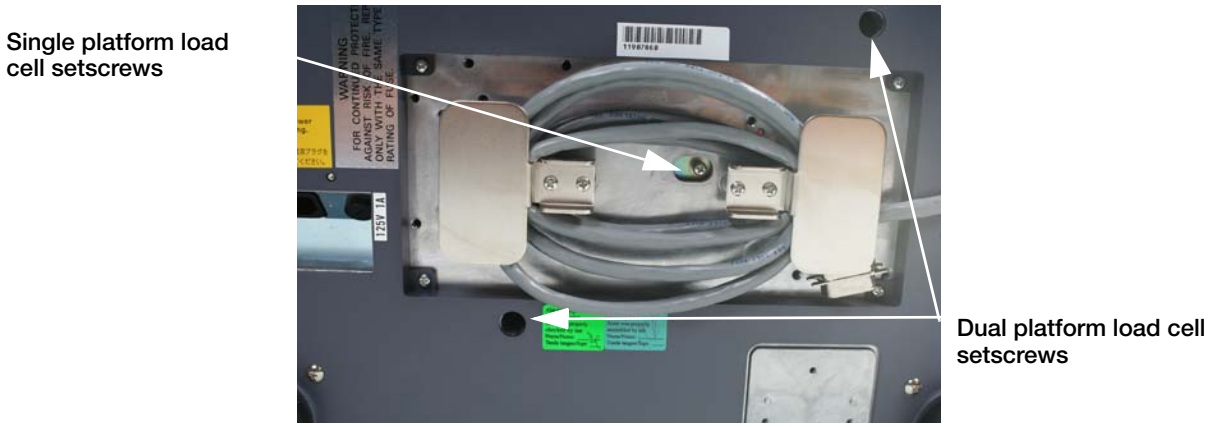


Figure 2-1. Location of Load Cell Setscrews for Single and Dual-Platform Scales (DIGI S-XL Scale Base shown)

2. Remove the load cell setscrew using a hex wrench for the dual platform setscrews or a Phillips head screwdriver for the single platform scale.
3. Tape the setscrews to the bottom of the scale or store in a safe place for possible future use.

2.2.2 Locking and Unlocking - S-YC Scale Base

The Counterpart S-YCL scale base is delivered in a locked position to prevent damage to the load cells during shipment. The scale base uses two setscrews. The setscrews are located on the bottom of the base and must be removed before the scale is put into service. Use the following procedure to unlock the scale base for the S-YC Model.

1. Turn the scale on its side.

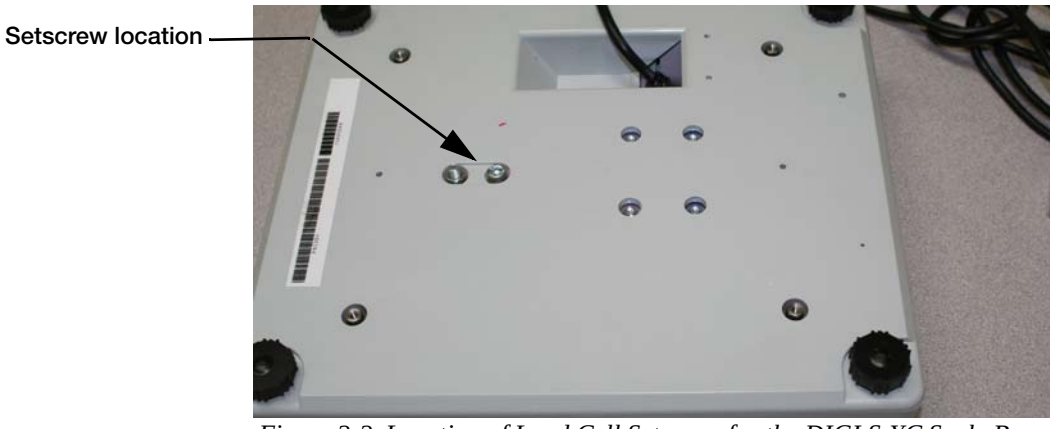


Figure 2-2. Location of Load Cell Setscrew for the DIGI S-YC Scale Base

2. Remove the load cell setscrews using a hex wrench which is included.
3. Tape the setscrews to the bottom of the scale or store in a safe place for possible future use.

2.2.3 Leveling

Select a location for the *Counterpart* that is reasonably level and free of vibrations and air currents. Adjust the four corner feet on the scale base and refer to the bubble level on the inside frame. The base should not rock and the feet should have solid contact with the surface.

Note *Ensure the nut on each foot's bolt is secured flush against the scale base.*

To ensure greater scale stability, turn in all four adjustable legs before leveling. Turn out adjustable legs to level as needed.

Figure 2-3. Adjust the Scale Base Feet

2.3 Enclosure Disassembly

The *Counterpart* indicator enclosure must be opened to connect cables for load cells, communications, and digital inputs/outputs.

WARNING ***Before opening the unit, ensure the unit is turned off and the power cord is disconnected from the power outlet. The power outlet must be located near the indicator to allow the operator to easily disconnect power to the unit.***

Ensure power to the indicator is disconnected, then place the indicator on an anti static mat. Remove the four screws holding the top plate to the enclosure body and set them aside. Gently lift the top plate away from the enclosure and disconnect any cables and set it aside.

2.4 Cable Assembly Instructions

The indicator comes with five removable openings for running cabling through. The user can open as many as needed and can easily remove them by using needle-nose pliers as shown in Figure 2-4.

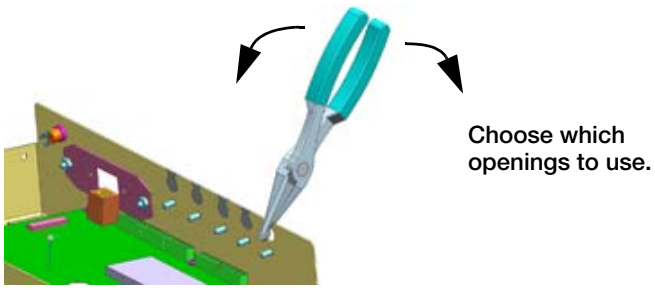


Figure 2-4. Removable Openings

Use the following steps to open and install cable assemblies.

1. Open the cover assembly by removing the four screws (only one shown in Figure 2-5).
2. Run the appropriate cable(s) through the desired opening(s).
3. Thread the plastic split bushing (found in the parts kits contents) onto the cable with the smallest diameter facing towards the enclosure and the split opening facing downwards.
4. Replace the cover assembly and tighten using the four screws.

5. Push the plastic bushing all the way into the enclosure to make a tight seal in the hole.

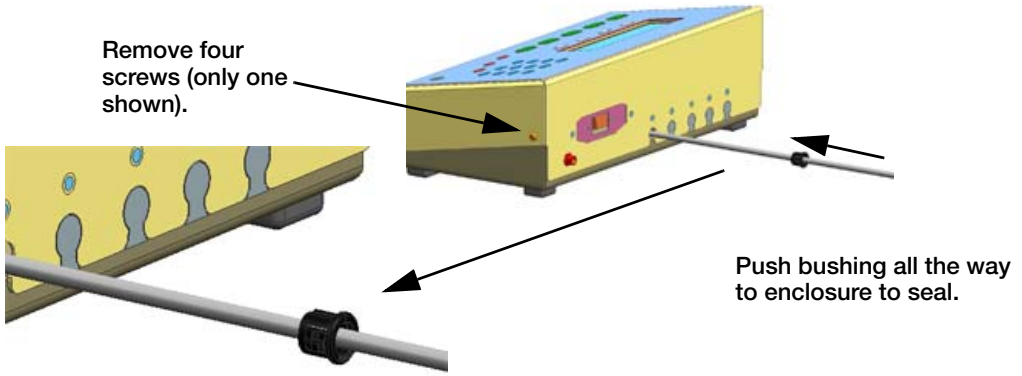


Figure 2-5. Use Plastic Bushings

Note ***Bushings are not a "cord grip." Bushings allow for free movement of cable while protecting them from the enclosure sides.***

2.5 Making Power Connections

The power source used for the *Counterpart* must be properly grounded to an acceptable earth ground and the outlet must be a grounded outlet. If the scale is remotely mounted, the platform must be separately grounded from the chassis ground screw located on the bottom of the platform. Connect this screw with 18 gauge wire to the same earth ground system as the AC power source. Failure to ground the base may cause static buildup that could cause damage to the electronics and/or give incorrect weight readings.

The AC adapter plugs in and turns to lock to the unit. Figure 2-6 shows the AC power location.

Figure 2-6. AC Power Location

2.6 Load Cell Wiring

On all complete units, the load cell has been wired to the CPU load cell terminal at the factory. Wire the cable to the CPU board's J1and J2 connector as shown in Table 2-1.

Note ***If using a 4-wire connection, set J1 and J2 to ON. If using a 6-wire connection, set J1 and J2 to OFF.***

J1 & J2	Function
1	+ Signal
2	- Signal
3	+ Sense
4	- Sense
5	+ Excitation
6	- Excitation

Table 2-1. J1 and J2 Pin Assignments

2.6.1 Dual Channel Units (S-XD Base)

For units that have dual channels, connect cable from the 14 pin connector to J1 and J2. If not using a dual base, remove the J2 connector as shown in Figure 2-8. Trim back the wires and tape.

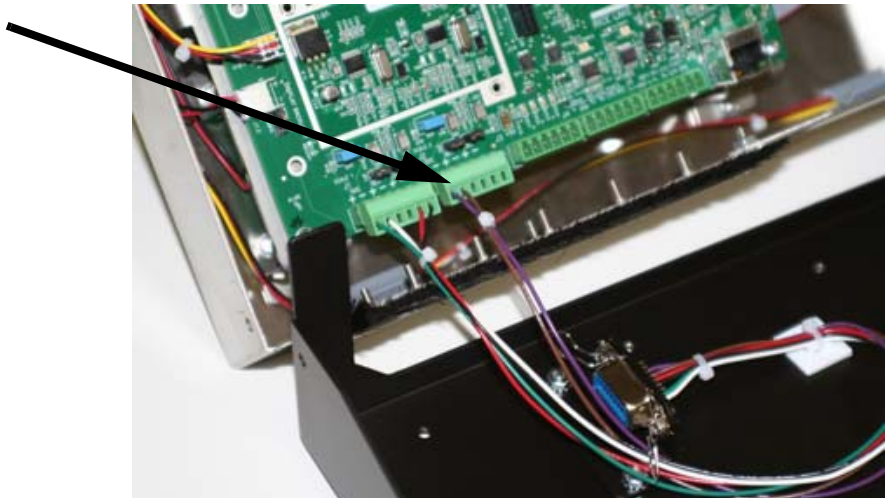


Figure 2-7. J2 Connector Location

2.6.2 Dual Channel – Remote Scale Setup

For units that have dual channels and want to set up a scale remotely, use the following steps:

1. Remove the connector from the parts bag (included).
2. Wire per the load cell wiring code.
3. Plug into the J2 connector on the CPU board (example shown in Figure 2-7).
4. Set up the soft key - Scale Select (see Section 3.7 on page 27).

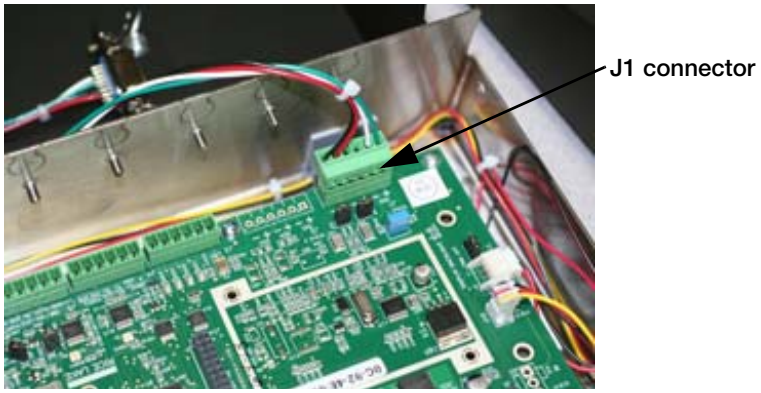


Figure 2-8. Remove J2 Connector if Using Single Base Scale or Only Single Base on a Dual Base

2.7 Wire Specifics

Wires connecting to J1, J2, J3, or J4 should adhere to the following specifications:

Wire Range	Wire Strip Length
28~12 AWG stranded or solid wire	5~6 mm (3/16" ~ 1/4")

Table 2-2. Wire Specifications for Connectors

2.8 Cable Grounding

Except for the power cord, all cables should be grounded against the scale enclosure. Do the following to ground shielded cables.

- Use the lockwashers, clamps, and kep nuts provided in the parts kit to install grounding clamps on the enclosure studs. Install grounding clamps that will be used; do not tighten nuts.
- Route cables and grounding clamps to determine cable lengths required to reach cable connectors. Mark cables to remove insulation and shield as described below.
- For cables with foil shielding, strip insulation and foil from the cable half an inch (15 mm) past the grounding clamp (see Figure 2-9). Fold the foil shield back on the cable where the cable passes through the clamp. Ensure silver (conductive) side of foil is turned outward for contact with the grounding clamp.
- For cables with braided shielding, strip cable insulation and braided shield from a point just past the grounding clamp. Strip another half inch (15 mm) of insulation *only* to expose the braid where the cable passes through the clamp (see Figure 2-9).
- Finish installation using cable mounts and ties to secure cables inside of indicator enclosure.

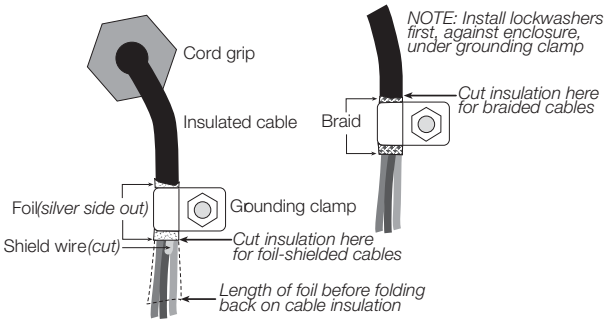

NOTE: Install lockwashers first, against enclosure, under grounding clamp
Cord grip
Insulated cable
Braid
Cut insulation here for braided cables
Foil(silver side out)
Grounding clamp
Shield wire(cut)
Cut insulation here for foil-shielded cables
Length of foil before folding back on cable insulation

Figure 2-9. Grounding Clamp Attachment for Foil-Shielded and Braided Cabling

2.8.1 Serial Communications

Wire the serial communications cables to J4, which is Port 2 (5-wire RS-232 port). J5 is Port 1 (RS-232 and 20 mA). Connect communications cables to J5 and J4 as shown in Table 2-3.

Use cable ties to secure serial cables to the inside of the enclosure.

Port 1 supports full duplex RS-232 communications only; Port 2 provides either active 20 mA output or duplex RS-232 transmission. Both ports are configured using the SERIAL menu. See Section 3.7.3 on page 42.

Connector	Pin	Signal	Port
J4	1	+20 mA	2
	2	Ground or -20 mA	
	3	Tx	
	4	Rx	
	5	CTS	
	6	RTS	
J5	1	Ground	1
	2	Ground	
	3	Tx	
	4	Rx	
	5	DTR	
	6	RTS	

Table 2-3. J4 and J5 Pin Assignments

Note ***An additional port (Port 3) is available if needed through the installation of an option card at J14.***

2.8.2 Digital I/O

The Digital I/O can be configured as either digital inputs or digital outputs as determined by the Digital I/O menu (see Section 3.7.3 on page 42). The inputs are active (on) with low voltage (0 VDC) and can be driven by TTL or 5V logic without additional hardware. Use the Digital I/O menu (see Section 3.7.3 on page 42) to configure the digital inputs. LEDs on the CPU board light when digital inputs are active (see Figure 2-10).

Digital outputs are typically used to control relays that drive other equipment. Outputs are designed to sink not source, switching current. Each output is a CMOS circuit, capable of sinking 24 mA when active. Digital outputs are wired to switch relays when the digital output is active (low, 0 VDC) with reference to 5 VDC supply. LEDs on the CPU board light up when the digital outputs are active (see Figure 2-10).

Connector	Pin	Signal
J3	1	+5V
	2	Ground
	3	DIG I/O 1
	4	DIG I/0 2
	5	DIG I/O 3
	6	DIG I/O 4

Table 2-4. J3 Pin Assignments (Digital I/O)

2.8.3 Network Connection to Counterpart

Counterpart has an onboard Ethernet connection. Its wireless connectivity is made possible with the optional Lantronix®[1] WiPort wireless networking device (PN 108671). Refer to the WLAN installation instructions (PN 108680) included with the option card for installation and configuration instructions.

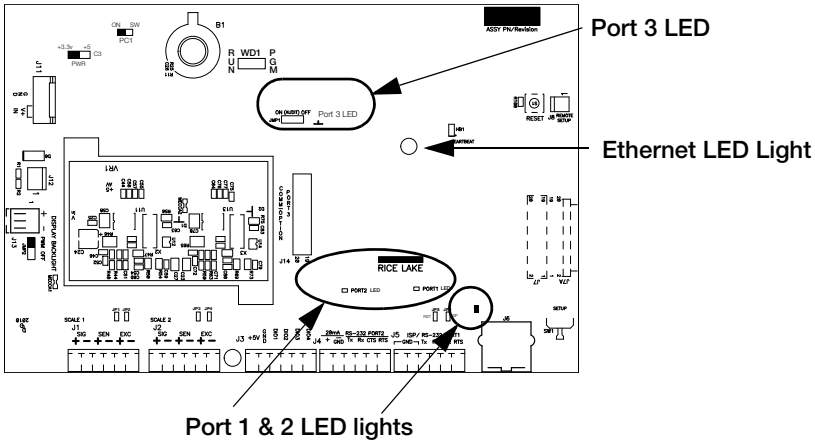


Figure 2-10. LED Light Locations

1. Lantronix® is a registered trademark of Lantronix Inc.

Note ***The Ethernet LED light is on when connected at 100 mb/s and is off when connected at 10 mb/s.***

2.9 Enclosure Reassembly

Once the cabling is complete, position the top plate over the enclosure and reinstall the four screws.

2.10 CPU Board Removal

If you must remove the *Counterpart* CPU board, use the following procedure:

1. Disconnect power to the scale.
2. Disconnect power supply cable from connector J12 on the *Counterpart* CPU board.
3. Disconnect the wires at the following connectors: J1, J2, J3, J4 and J5 and J13 if equipped.
4. Remove the six screws connecting the CPU board and then lift the board out of the enclosure.

To replace the CPU board, reverse the above procedure. Be sure to reinstall cable ties to secure all cables inside the indicator enclosure.

2.11 CPU Board Battery Replacement

CAUTION ***Risk of explosion exists if battery is replaced with incorrect type. Dispose of batteries according to manufacturer instructions.***

The lithium battery on the CPU board maintains the real-time clock and protects data stored in the system RAM when the indicator is not connected to AC power. Data protected by this battery includes time and date, IDs, buffered WeighVault transaction data and setpoint value data. If any data is lost, the indicator configuration can be restored from the PC. Watch for the low battery warning on the LCD display and periodically check the battery voltage on the CPU board. Batteries should be replaced when the indicator low battery warning comes on, or when battery voltage falls to 2.2 VDC. Life expectancy of the battery is 7 years. Use Revolution to store a copy of the configuration before attempting to replace the battery.

For best results, replace the battery while in weigh mode and with AC power applied. Use care not to bend the battery retaining spring. The battery location on the CPU board is shown in Figure 2-13 on page 15 as B1.

2.12 Field Installation of Battery

An optional DC battery pack (PN124692) for Counterpart is available and can be purchased from Rice Lake Weighing Systems to ship with the scale or retrofit in the field. The rechargeable 12V battery pack allows for more than 24 hours of continuous use without an AC power supply.

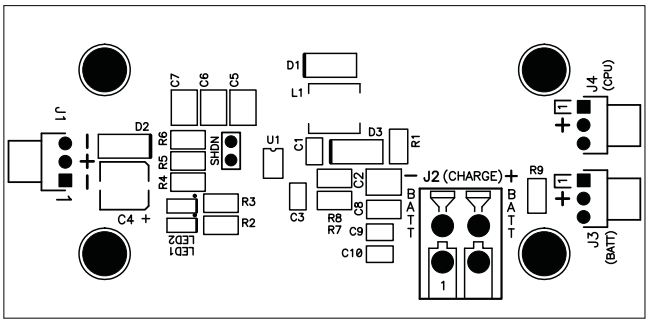


Figure 2-11. Battery Pack CPU Board

The battery pack can be installed next to the CPU board of Counterpart. Use the following procedure to install or replace the battery pack.

1. Disconnect power from scale prior to opening.
2. If indicator is connected to scale base, disassemble and set scale base aside.
3. Place the indicator on an anti-static mat.
4. Remove the four screws holding the top plate to the enclosure body and set them aside.
5. Gently lift the top plate away from the enclosure and disconnect any cables and set it aside.
6. Using the supplied nuts, secure battery pack to enclosure using a 5/16" nut driver.

Unplug existing power off the CPU board and plug in battery plug J1 on battery CPU.
Run cable from battery pack to J12 on main CPU board.
Screw bracket into enclosure (only one side shown).

Figure 2-12. Secure Battery Pack into Enclosure

7. Run cable over to power plug J12 on the Counterpart CPU board.

Figure 2-13. Connect Power Plug onto J12 on CPU Board

8. Unplug existing power off the CPU board and plug in battery plug J1 on battery CPU.
9. AC plugs into the back of the unit.

Red and green LEDs located on the battery CPU board tell the user whether the battery is fully charged or not.

2.13 Installing Option Cards

Disconnect power cord before installing option cards.

Note ***Ethernet port is not suitable for connection to circuits used outside the building and is subject to lightning or power faults.***

Each option card is shipped with installation instructions specific to that card. For specific instructions on the WLAN card, refer to Section 8.0 on page 88.
The general procedure for all option cards is:

1. Disconnect power cord from the scale.
2. Install the plastic standoffs in the standoff holes.
3. Carefully align the option card connector with the J14 connector on the CPU board.
4. Press down firmly to seat the option card in the CPU board connector.
5. Make connections to the option card as required. Use cable ties to secure loose cables inside the enclosure.

When installation is complete, reassemble the enclosure as described in Section 2.9 on page 13

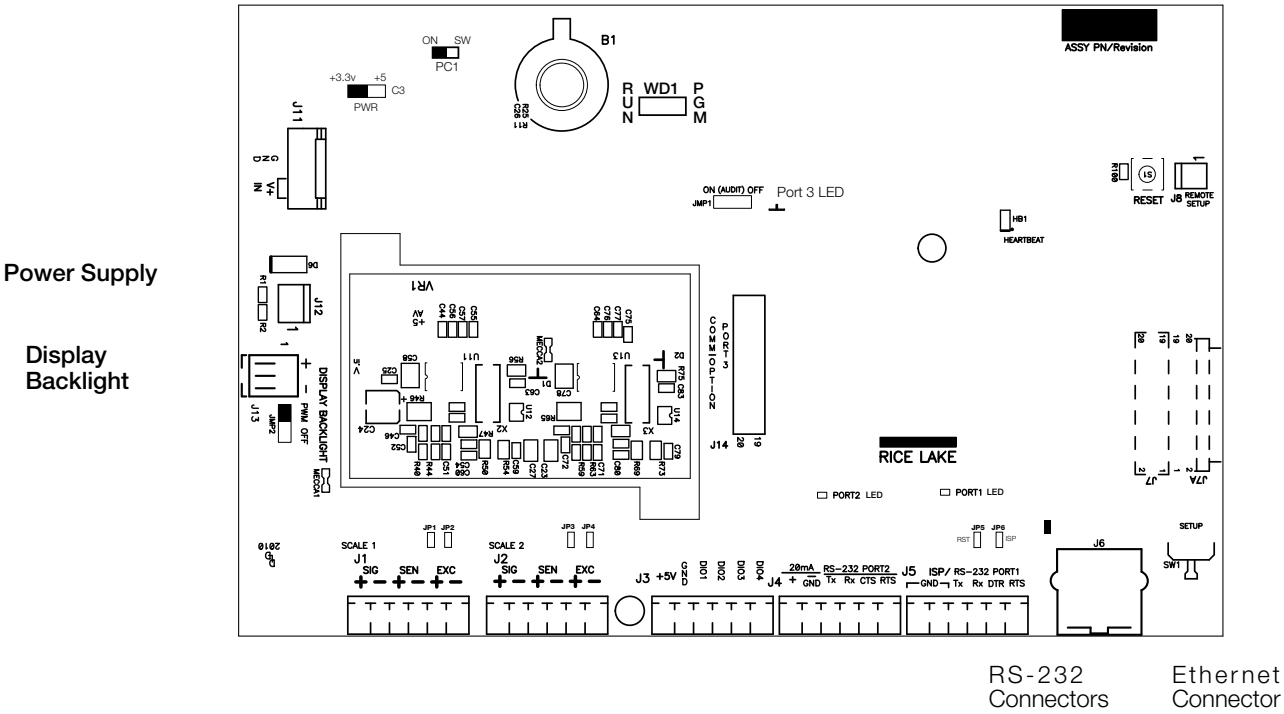


Figure 2-14. CPU Board

Jumper	Description
JP1/JP2 JP3/JP4	Jump excitation to sense. If using a 4-wire load cell cable (JP3 and JP4 for scale number 2), leave JP1 and JP2 on. If using a 6-wire load cell cable, take JP1 and JP2 off. Default is ON.
JP5/JP6	Used when upgrading firmware. The jumpers should be on when upgrading firmware and off when the update is complete.
PC 1	Power control. If the jumper is set to SW, the POWER key can be used to turn the unit on/off. If set to ON, the unit will power on when plugged in and can only be powered off by unplugging.
JMP2	Set display backlight setting jumper to the OFF position which turns off the backlight.
AUDIT JMP1	If set to Audit ON, calibration and configuration can be accessed through the front keypad. If set to Audit OFF, calibration and configuration can only be accessed by removing the screws from the unit and placing the jumper in the ON position.
PWR	+3.3V/5V Factory use only — leave in 3.3V position.

Table 2-5. Jumper Descriptions

Note

If the RESET button on the CPU board is pressed, the scale will perform a reboot.

Jumper WD1 is located next to B1 battery on the CPU board. Put the jumper to PGM for programming mode only and move the jumper to RUN position for normal operation.

For backlit display to function properly, jumper JMP2 should be set to PWM and jumper PWR should be set to 3.3V.

2.13.1 USB Option Card Installation

Use the following steps to install the USB option card:

1. Disconnect power cord from the scale.
2. Install the plastic standoffs in the standoff holes.
3. Carefully align the option card connector with the J14 connector on the CPU board (as shown in Figure 2-13 on page 15).

4. Press down firmly to seat the option card in the CPU board connector.

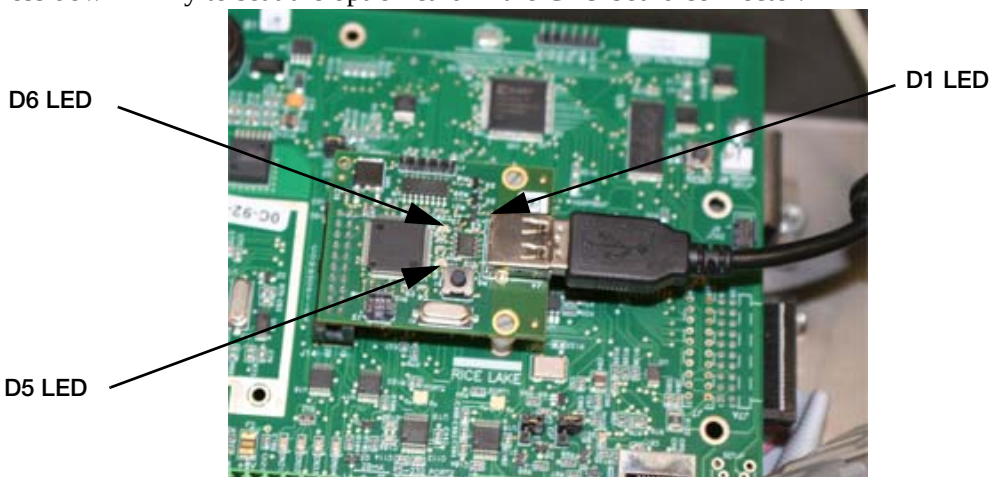


Figure 2-15. Installing the USB Option Card

5. Several signal LEDs are located on the USB option board as shown in Figure 2-15.
   - D5 — When flashing, it indicates that a keyboard is connected and has been detected.
   - D6 — Is lit continuously when the option board is waiting for a keyboard to be connected. It is off when a keyboard is connected.
   - D1 — Indicates that there is communication with the main CPU board. It should flicker for each keypress on the attached keyboard.

Note *USB option is for USB keyboard only.*

2.14 Bracket Assembly Connecting Indicator to Scale Base

The Counterpart scale comes with an easy bracket assembly that conveniently hooks the indicator head to the scale base. There are two bracket assemblies that can be used to attach the indicator to the scale base depending on which scale base is being used.

- DIGI S-XL base bracket assembly kit number 121459
- DIGI S-YC base bracket assembly kit number 154700

The associated assembly is found in the scale base box and is shown below.

Figure 2-16. Bracket Assembly Kit for the Counterpart Scale Base

Use the following steps to attach the indicator to the scale base.

CAUTION ***Do not turn the scale upside down. Always work with the scale on its side. Damage to the load cell can occur if the scale is turned upside down.***

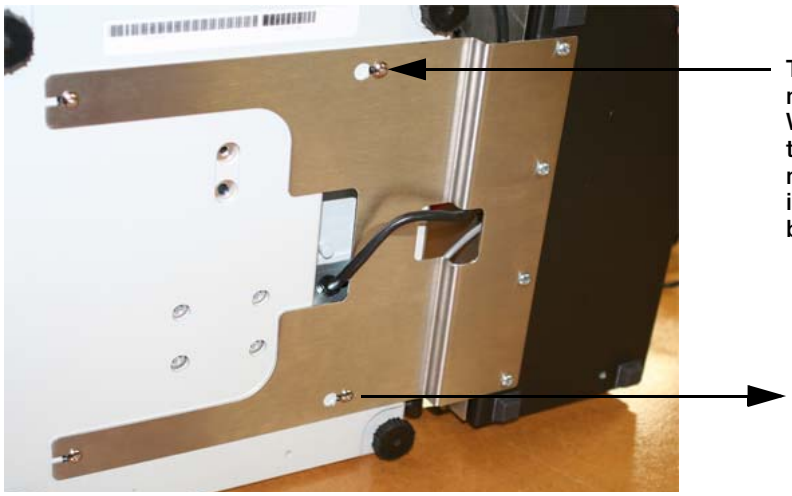
1. Stand scale base on its side to attach the bracket to the scale using the screws provided in the bracket kit.
2. Ensure that the cable underneath the scale base is threaded through the opening between the scale and the bracket, otherwise it will not fit.(shown in Figures 2-18 and 2-19).

Note

Ensure the cable from the underside of the scale is run between bracket and scale prior to attaching bracket.

Figure 2-17. Attach Bracket Assembly to Scale Base While Scale Is Tipped on its Side (DIGI S-XL Base Shown).

m,



The DIGI S-YC scale base comes with notched holes in the bracket assembly. While plugging in the AC adapter, slide the bracket assembly forward to allow more room to work. Once the AC adapter is connected, slide the bracket assembly back and finish tightening the screws.

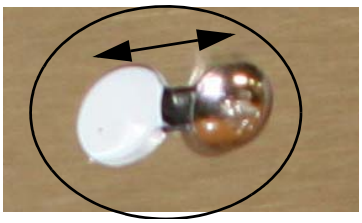


Figure 2-18. Attach Bracket Assembly to DIGI S-YC Scale Base

3. Set scale base down on a flat surface positioning the bracket assembly at the edge of a table.
4. Attach the indicator to the bracket using the second set of screws provided and screw white threaded standoffs into indicator base as in Figure 2-19 if using the S-YC scale base and then screw feet into the bottom of the standoffs.

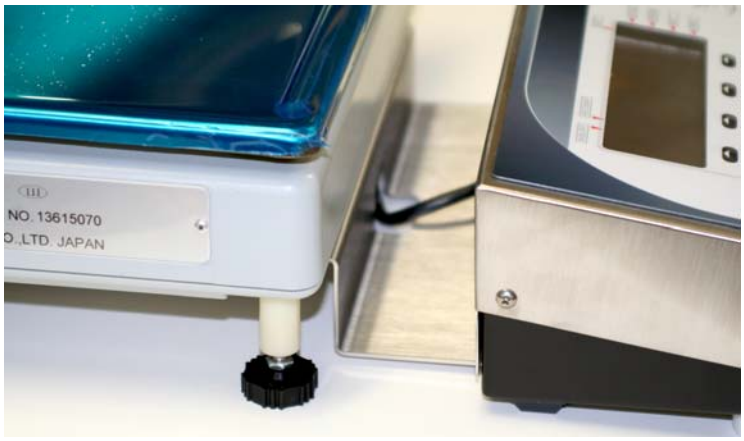


Figure 2-19. Indicator Attached to the Scale Base (DIGI S-YC Scale Base Shown)

2.15 Indicator Replacement Parts and Assembly Drawings

Ref Number	Part Number	Description (Quantity)
1	118434	Overlay, membrane switch panel (1)
2	118435	Counterpart cover enclosure (1)
3	120756	Seal strip, nylon brush w/ holes (1)
4		
5	119275	LCD display module (1)
6		
7	120484	CPU mounting bracket (1)
8	14621	Kep nut, 6-32NC hex (6)
9	120741	CPU board (1) single AD
	117507	CPU board (1) dual AD
10	14822	Machine screw, 4-4 ONC x 1/4 (6)
11	118437	Enclosure base (1)
12	19433	Rubber foot (4)
13	60130	Ribbon cable (1)
14	75146	Coverplate (1)
15	120266	Machine screw, 6-32NC x 3/8 (4)
16	69291	Lithium battery, 3V (1)
17	59274	#6 flat washer (1)
18	56972	Flat cable clamp (2)
	128063	Power supply assembly (1)

Figure 2-20. Counterpart Indicator Replacement Parts

Figure 2-21. Counterpart Front View

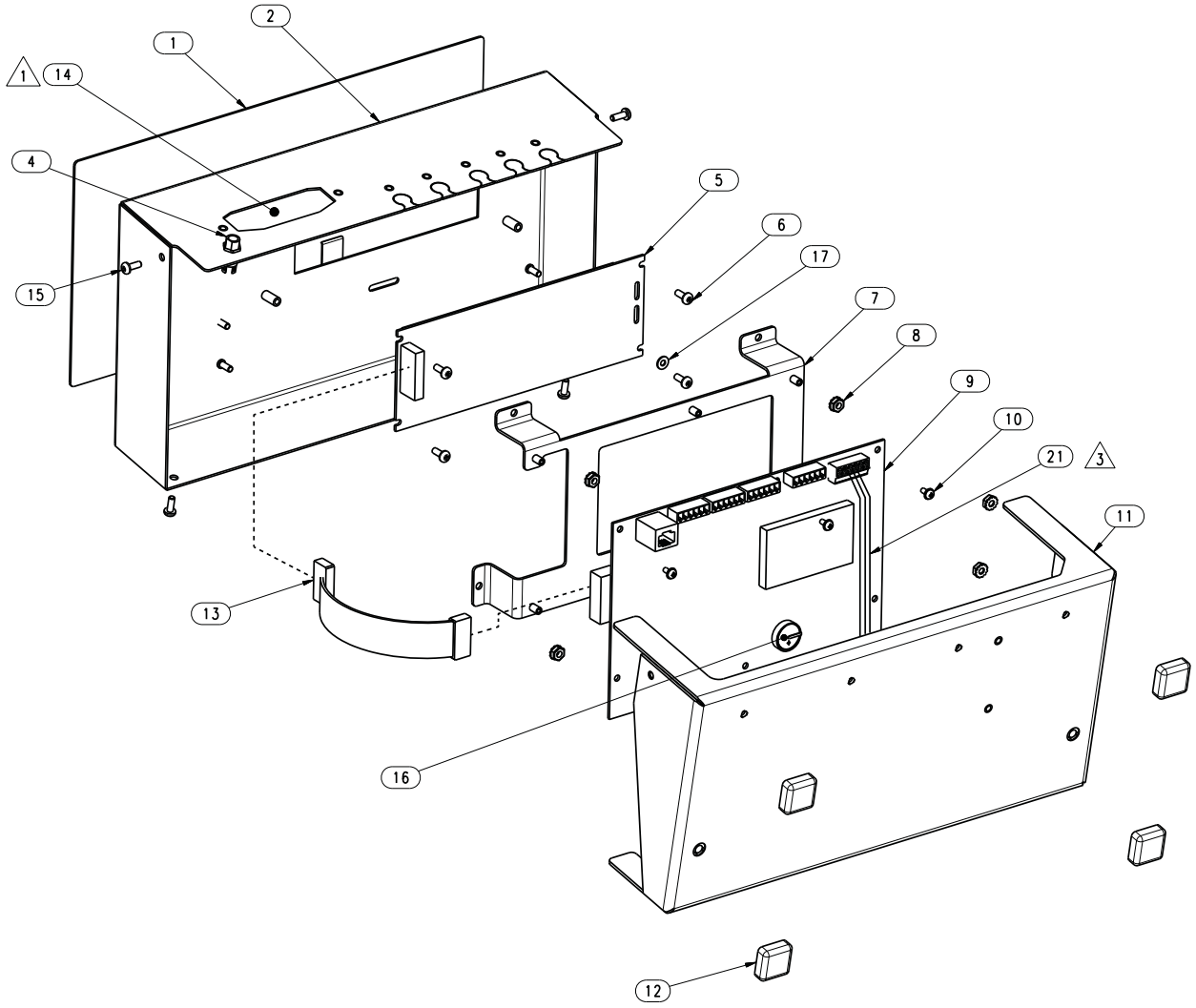


Figure 2-22. Counterpart Assembly and Components

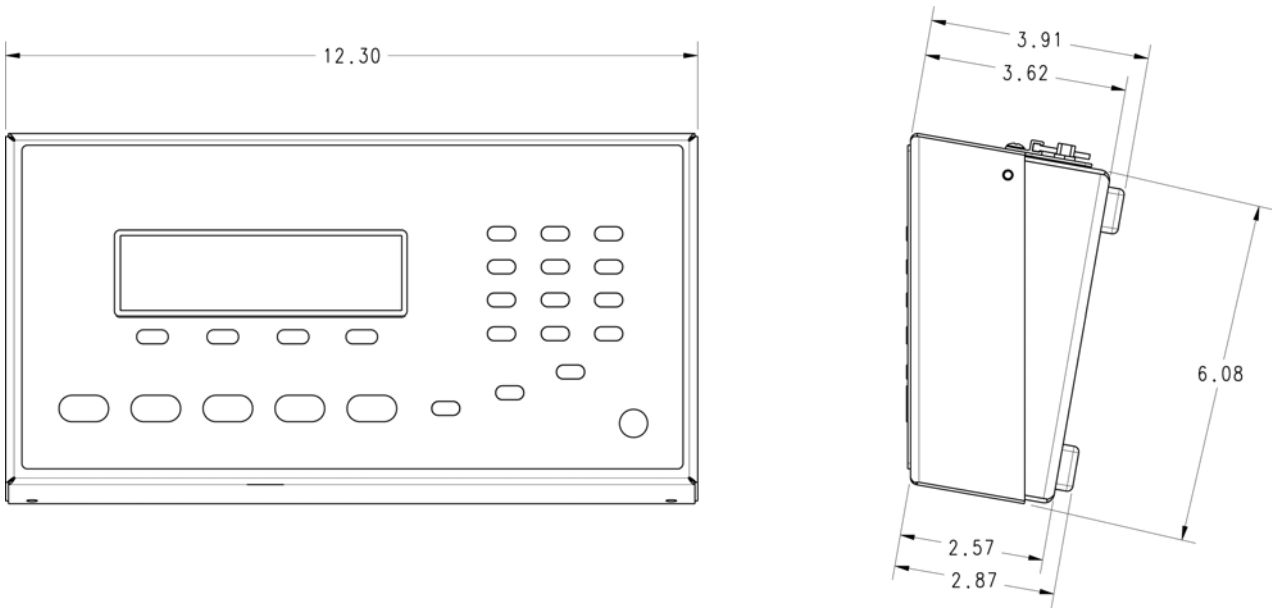


Figure 2-23. Counterpart Dimensions

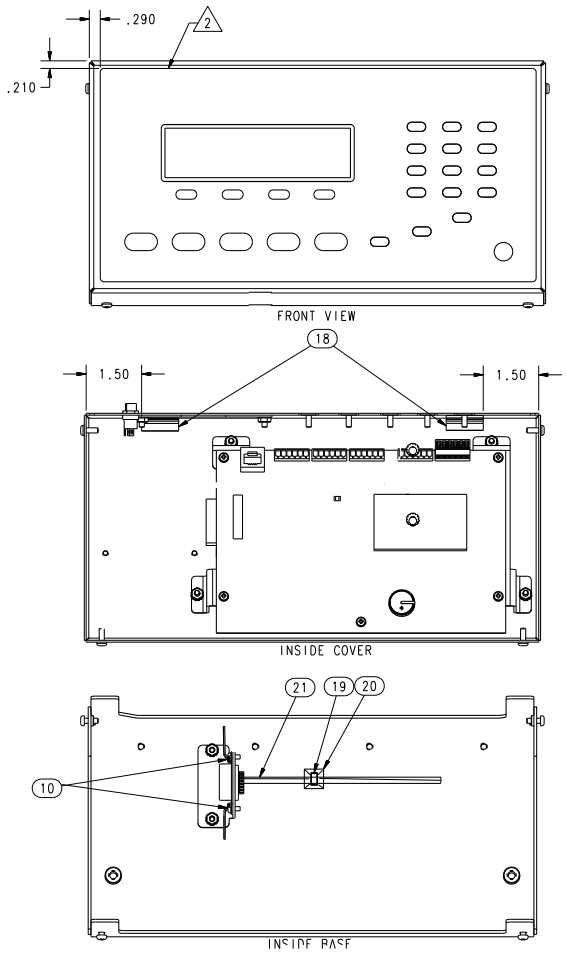


Figure 2-24. Counterpart Rear and Side Dimensions

3.0 Configuration

The *Counterpart* scale can be configured using a series of menus accessed through the scale front panel when the scale is in setup mode. Figure 3-1 and Table 3-1 on page 22 summarizes the functions of each of the top level menus.

Note *To navigate through the menus, use the front panel keys and shown in Figure 3-2 on page 22.*

3.1 Front Panel Configuration

To set up and configure the *Counterpart* counting scale, select the **MENU** key on the front panel. The default for the indicator is set at the factory with the audit trail jumper (JMP1) in the ON position, allowing configuration access by pressing the **MENU** key. Pressing the **MENU** key will take you to the ***Audit*** menu selection. Use the **SAMPLE** (◁) and **PRINT** (▷) navigation keys to move to other menu selections. Use the **NET/GROSS** (▽) and **ZERO** (△) navigation keys to enter and exit menu selections.

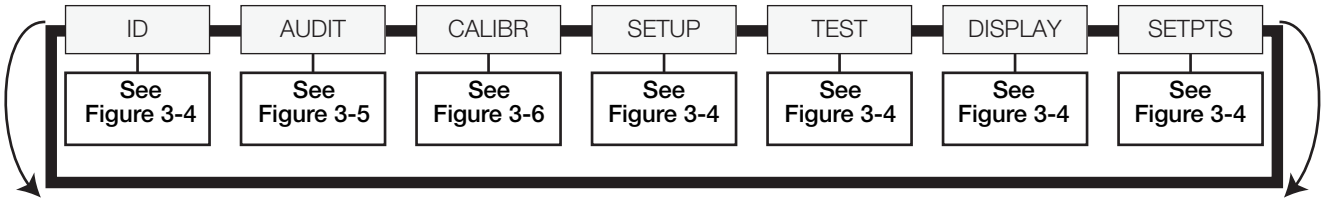


Figure 3-1. Menu Mode Navigation Structure

Menu		Function
ID	ID	Allows you to setup or edit IDs.
AUDIT	Audit Trail	Displays the legally relevant (LR) firmware version, configuration count, and calibration count.
CALIBR	Calibrate	Calibrates the scale.
SETUP	Setup	Accesses setup options for the scale, features, serial output, print format, digital inputs and outputs, and displays the version number.
TEST	Test	Performs a basic test on the A/D, digital inputs and outputs, communication ports, RAM, and keypad.
DISPLAY	Display	Accesses the setup option for contrast, image, brightness.
SETPTS	Setpoints	Used for setting up weighmode setpoint accessible parameters using numeric values.

Table 3-1. Menu Summary

3.2 Menu Navigation

Once you have entered the menus, you can use the front panel buttons to navigate. Note the looped menu structure shown in Figure 3-1. This provides a shortcut for accessing the right-most menu items by navigating to the left, and vice versa for the opposite side of the menu. This shortcut also holds true for sub-menu navigation.

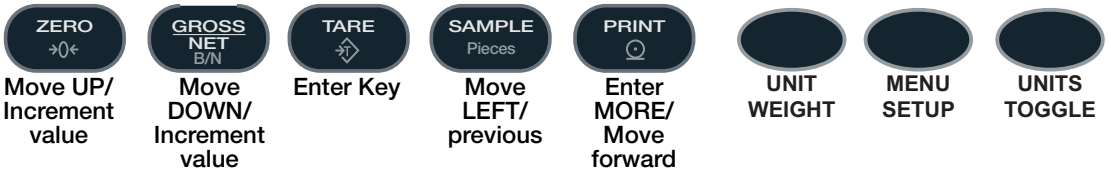


Figure 3-2. Front Panel Key Functions in Menu Mode

Various keys are used as directional keys to navigate through the menus. The **SAMPLE** (◁) and **PRINT** (▷) keys scroll left and right (horizontally) on the same menu level; **ZERO** (△) and **GROSS/NET** (▽) move up and down (vertically) to different menu levels. Each of these keys has a directional symbol indicating its menu navigation function. The **TARE (ENTER)** key has the same function as **GROSS/NET** (▽) when navigating the menu — either will move down to access subcategories of a main menu item. The **SAMPLE** (◁) and **PRINT** (▷) keys navigate to another digit. The numeric keys can also be used to insert a digit to the right of the blinking digit. Press **TARE** (**ENTER**) to accept the data and return to the next menu item.

Note *To exit Configuration and return to weighing, press the* MENU *key or press the* SAVEEXIT *softkey.*

3.3 Revolution Configuration

The Revolution configuration utility provides the preferred method for configuring the *Counterpart* indicator. Revolution runs on a personal computer to set configuration parameters for the indicator. When Revolution configuration is complete, configuration data is downloaded to the indicator.

Revolution supports both uploading and downloading of indicator configuration data. This capability allows configuration data to be retrieved from one indicator, edited, and then downloaded to another indicator with an identical hardware configuration.

To use Revolution, do the following:

1. Install Revolution on an IBM-compatible personal computer.
2. With both indicator and PC powered off, connect the PC serial port to the RS-232 pins on the indicator serial port or to the optional USB communications card.
3. Power up the PC and the indicator. Use the setup switch to place the indicator in setup mode.
4. Start the Revolution program.

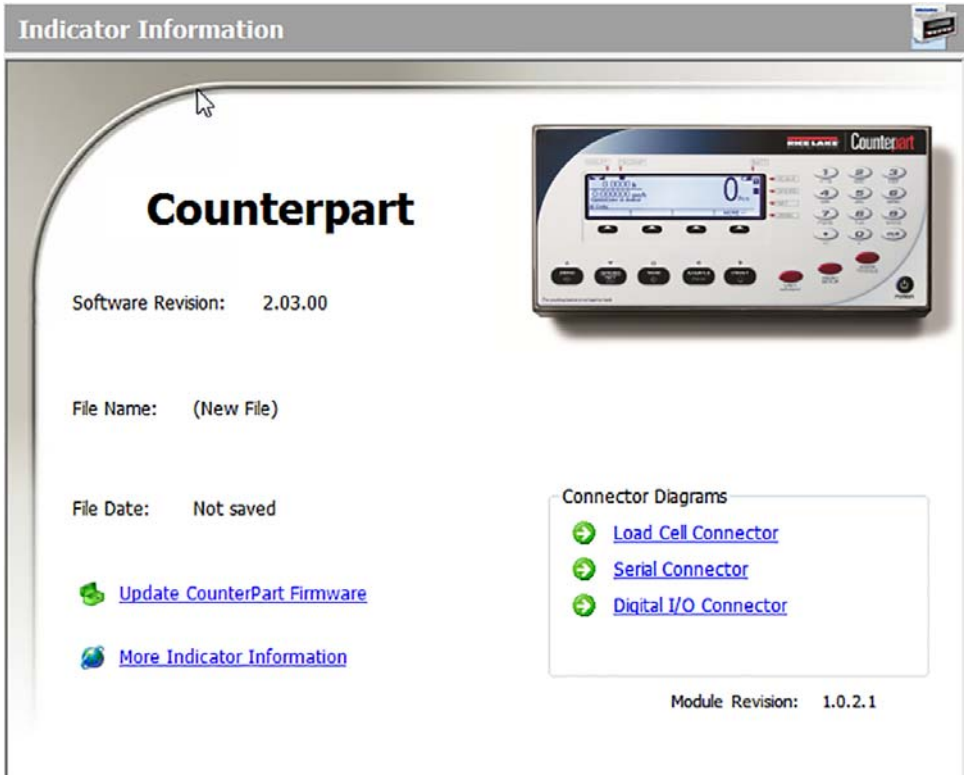


Figure 3-3. Revolution Display

Revolution provides on line help for each of its configuration displays. Parameter descriptions provided in this manual for front panel configuration can also be used when configuring the indicator using Revolution — the interface is different, but the parameters sets are the same.

3.4 ID Menu

The ID menu displays parameters for registers from 1 to 150. Sub-parameters are shown below.

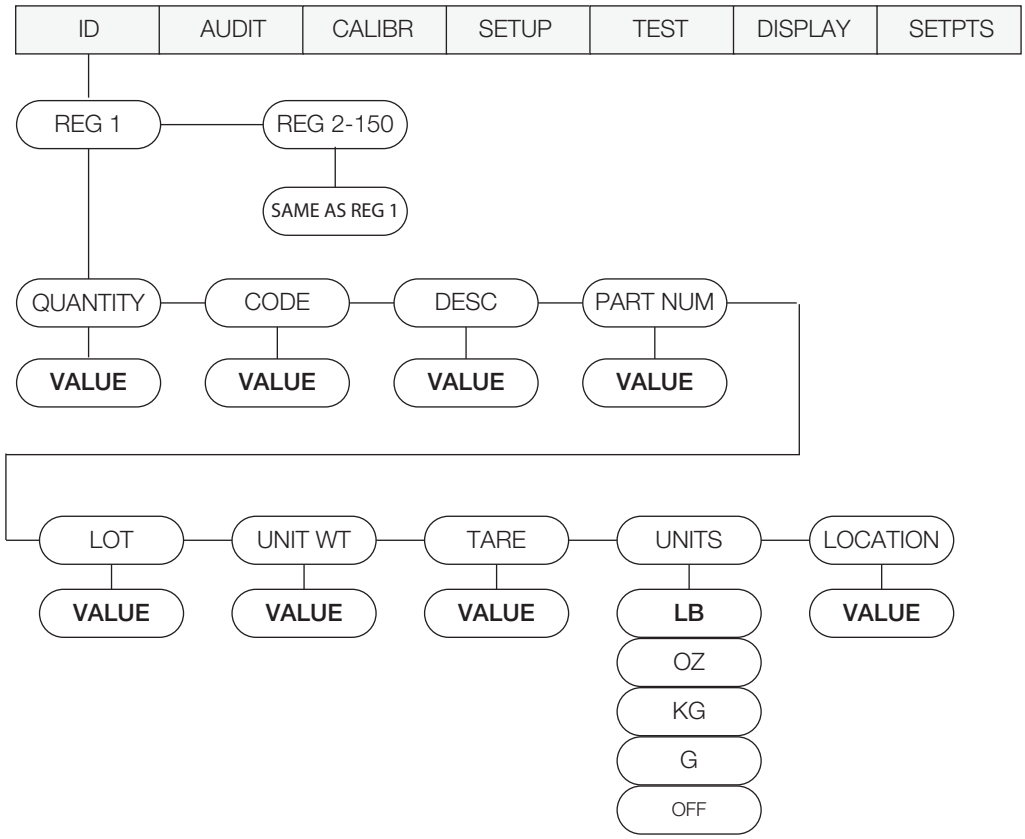


Figure 3-4. ID Menu Layout

ID Menu		
Parameter	**Choices**	**Description**
REG 1, 2 - 150	QUANTITY	Inventory quantity, range — 2000000000 to 200000000
	CODE	ID code for part, maximum 32 alphanumeric characters
	DESC	Part description, maximum 32 alphanumeric characters
	PART NUM	Part number, maximum 32 alphanumeric characters
	LOT	Part lot number, maximum 32 alphanumeric characters
	UNIT WT	Unit weight, range 0.0 to 9999999.0
	TARE	Tare weight, range 0.0 to 9999999.0
	UNITS	Weight units for both the unit weight value and the tare weight value, choices of OFF, KG, G, LB, OZ
	LOCATION	Part stock location, maximum 11 alphanumeric characters

Table 3-2.

Table 3-3. ID Menu Parameters

3.5 Audit Menu

The audit menu accesses audit trail support. It provides tracking information for configuration and calibration events. To prevent potential misuse, all configuration and calibration changes are counted as change events. Audit information can be printed by pressing the PRINT key while displaying the audit trail items beneath the AUDIT menu.

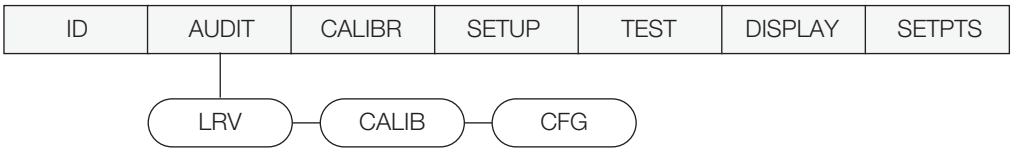


Figure 3-5. Audit Menu Layout

Audit Menu Parameters	
Parameter	**Description**
LRV	Legally relavent firmware version.
CALIB	Displays total calibration events.
CFG	Displays total configuration events.

Table 3-4. Audit Menu Parameters

3.6 Calibration Menu

See Section 4.0 on page 55 for calibration procedures. The Calibration menu can be protected by assigning a password in the Feature menu.

***Note** The Counterpart requires the WZERO and WSPAN points to be calibrated. The linearity points are optional, but must NOT duplicate zero or span. During calibration, the TARE key acts as a data entry confirmation key. It also acts as an EXECUTE key and accepts the value if calibration was successful.*

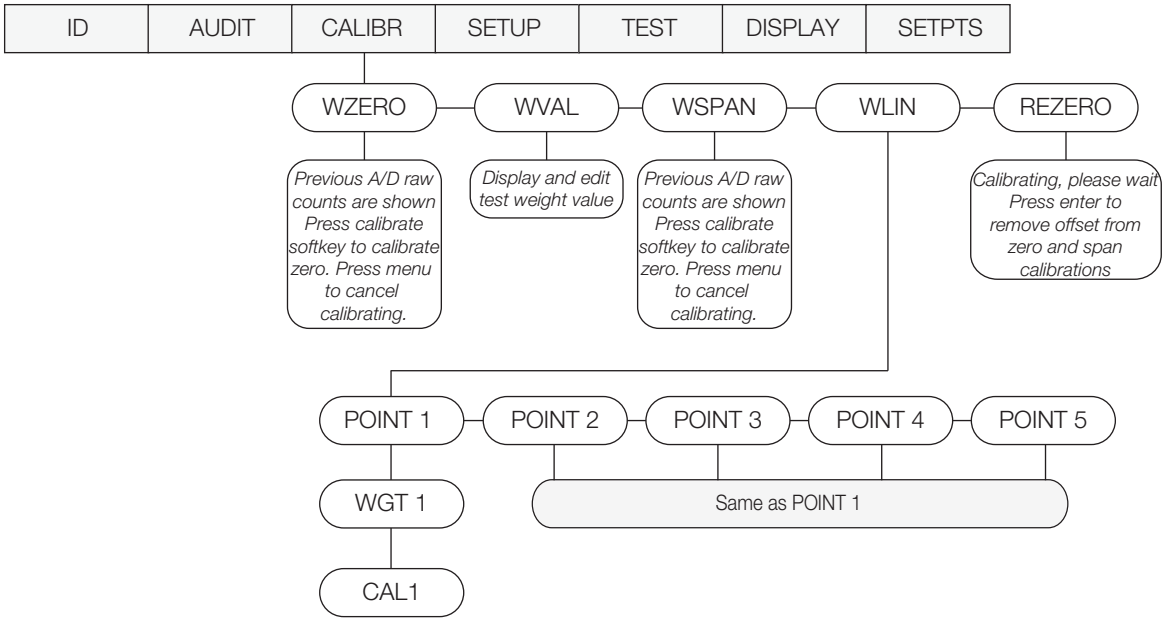


Figure 3-6. Calibration Menu Layout

CALIBR Menu		
Parameter	**Choices**	**Description**
Level 2 submenus		
WZERO		Press the calibrate softkey to display the AD raw counts. Press calibrate softkey again to calibrate zero, or press MENU to cancel. “CALIBRATING” will appear prior to automatically moving to WVAL.
WVAL		Press the calibrate softkey to display and edit the test weight value. Press the calibrate softkey again to move to WSPAN.
WSPAN		Press the calibrate softkey to display the AD raw counts. Press the calibrate softkey to calibrate the span or press MENU to cancel. “CALIBRATING” will appear prior to automatically moving to WLIN.
WLIN	POINT 1 — POINT 5	WGT 1 allows you to display and edit the test weight value. Press the calibrate softkey to edit the value. CAL1 allows you to calibrate and display the raw AD value. Press TARE to perform calibration. Press the calibrate softkey to move to the next calibration point. ***Note** The linearity points are optional, but must not duplicate zero or span. They must be between zero and span.*
REZERO		Press the calibrate softkey to remove an offset value from the zero and span calibrations if hooks or chains are being used during calibration. ***Note** Use this parameter only after WZERO and WSPAN have been set. See Section 4.1 on page 55 for more information.*

Table 3-5. Calibration Menu Parameters

3.7 Setup Menu

The setup menu allows:

- Configuration of scale, features, serial port, Ethernet, print format, and digital inputs and outputs settings
- Viewing of the software and regulatory versions and reverting to default settings

.

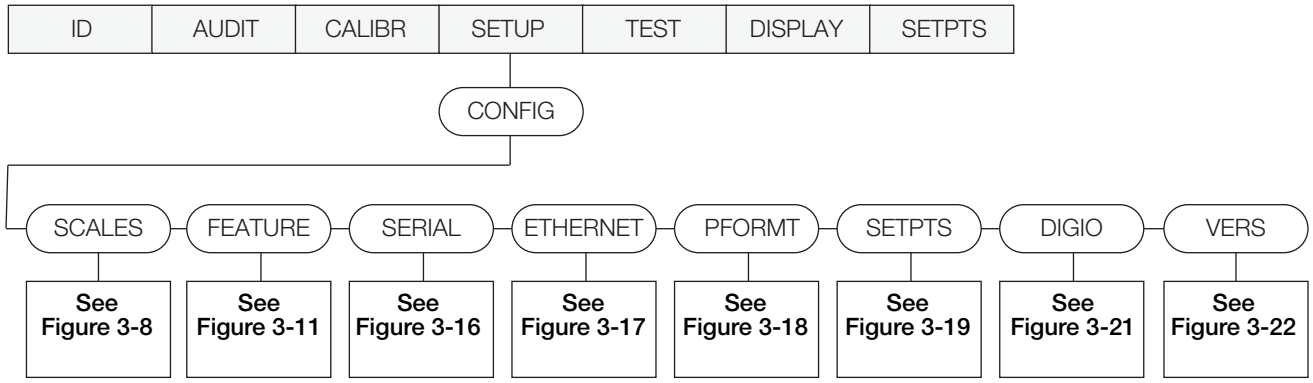


Figure 3-7. Setup Menu Layout

Menu	Choices	Menu Function
SCALES	Configuration	Configure and calibrate scales.
FEATURE	Feature	Set passwords, keyboard locks, regulatory mode, and initial consecutive number value, count function, and define softkeys.
SERIAL	PORT 1 PORT 2 PORT 3 (Option Card)	Configures the communications ports.
ETHERNET	Ethernet	Configures the Ethernet port.
PFORMT	Print Format	Set print format used for header, gross, net, count, pallet, setpoint and total ticket formats. See Section 6.0 on page 72 for more information.
SETPTS	Setpoints	Configure setpoints.
DIG IO	Digital IO	Assign digital input/output functions.
VERS	Version	Display installed software version and regulatory version numbers. The **Reset Config** softkey on the Version menu can be used to restore all configuration parameters to their default values.

Table 3-6. Setup Menu Parameters

3.7.1 Scale Menu

Calibration can be performed in two places within the menu: the CALIBR menu shown in Figure 3-6 on page 26 is an in-depth scale setup and calibration. A “quick access” calibration is shown in Figure 4-1 on page 55.

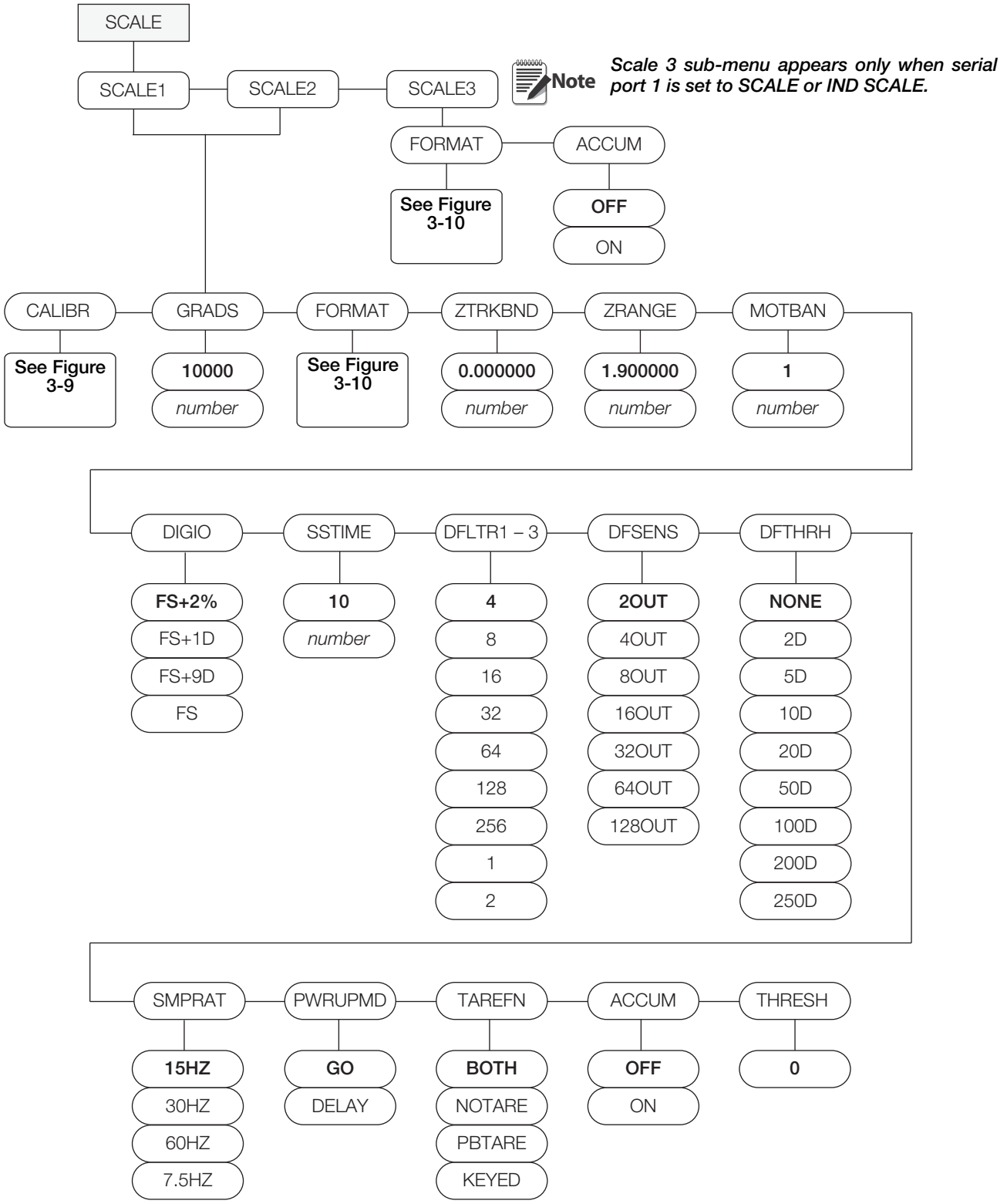


Figure 3-8. Setup – Scale Menu

Parameter	Choices	Description
Scales 1 and 2		Allows configuration and calibration of each scale.
Scale 3		Allows configuration and calibration of scale 3.
Scales sub-menu		
GRADS	**10000** *1–100000*	Specifies the number of full scale graduations. The value entered must be in the range 1–100000 and should be consistent with legal requirements and environmental limits on system resolution. **To calculate GRADS, use the formula: GRADS = *Capacity / Display Divisions*.** Display divisions are specified under the FORMAT sub-menu.
FORMAT	PRIMRY SEC TER	Select your primary, secondary, and tertiary units of measure. Sub-choices include lb, kg, oz, and g. See Format menu, Figure 3-10.
ACCUM	**OFF** ON	Scale 3 only.
ZTRKBND	**0.000000** *number*	Automatically zeros the scale when within the range specified, as long as the input is within the ZRANGE and scale is at standstill. Specify the zero tracking band in ± display divisions. Maximum legal value varies depending on local regulations. **Note** ***For scales using linear calibration, do not set the zero tracking band to a value greater than that specified for the first linearization point.***
ZRANGE	**1.900000** *number*	Selects the range within which the scale can be zeroed. The 1.900000 default value is ± 1.9% around the calibrated zero point, for a total range of 3.8%. Indicator must be at standstill to zero the scale. Use the default value for legal-for-trade applications.
MOTBAND	**1** *number*	Sets the level, in display divisions, at which scale motion is detected. If motion is not detected for 1 second or more, the standstill symbol lights. Some operations, including print, tare, and zero, require the scale to be at standstill. Maximum legal value varies depending on local regulations. If this parameter is set to 0 the standstill annunciator does not light; operations normally requiring standstill (zero, tare, print) are performed regardless of scale motion. If 0 is selected, ZTRKBND must also be set to 0.
OVRLOAD	**FS+2%** FS+1D FS+9D FS	Overload. Determines the point at which the display blanks and an out-of-range error message is displayed. Maximum legal value varies depending on local regulations.
SSTIME	**10** *number*	Specifies the length of time the scale must be out of motion, in 0.1-second intervals, before the scale is considered to be at standstill. Values greater than 10 are not recommended.
DFLTR 1-3	**4** 8 16 32 64 128 256 1 2	Selects the digital filtering rate used to reduce the effects of mechanical vibration from the immediate area of the scale. The overall filtering effect can be expressed by adding the values assigned to the three filter stages: DFLTR1 + DFLTR2 + DFLTR3 See Section 9.6 on page 94 for information on digital filtering. Choices indicate the number of AD conversions per update that are averaged to obtain the displayed reading. A higher number gives a more accurate display by minimizing the effect of a few noisy readings, but slows down the settling rate of the indicator.
DFSENS	**4OUT** 2OUT 8OUT 16OUT 32OUT 64OUT 128OUT	Digital filter cutout sensitivity. Specifies the number of consecutive readings that must fall outside the filter threshold (DFTHRH parameter) before digital filtering is suspended.

Table 3-7. Scales Menu Parameters

Parameter	Choices	Description
DFTHRH	**NONE** 2D 5D 10D 20D 50D 100D 200D 250D	Digital filter cutout threshold. Specifies the filter threshold, in display divisions. When a specified number of consecutive scale readings (DFSENS parameter) fall outside of this threshold, digital filtering is suspended. If NONE is selected, the filter is always enabled.
SMPRAT	**15 HZ** 30 Hz 60 Hz 7.5 Hz	Sample rate. Selects measurement rate, in samples per second, of the analog-to-digital converter. Lower sample rate values provide greater signal noise immunity.
PWRUPM	**GO** DELAY	Power up mode. In GO mode, the indicator goes into operation immediately after a brief power up display test. In DELAY mode, the indicator performs a power up display test and then enters a 30-second warm-up period. If no motion is detected during the warm-up period, the indicator becomes operational when the warm-up period ends; if motion is detected, the delay timer is reset and the warm-up period is repeated.
TAREFN	**BOTH** NOTARE PBTARE KEYED	Enables or disables push-button and keyed tares. Possible values are: BOTH: Both push-button and keyed tares are enabled NOTARE: No tare allowed (gross mode only) PBTARE: Push-button tares enabled KEYED: Keyed tare enabled
ACCUM	**OFF** ON	Accumulator. Specifies whether the scale accumulator is enabled. If enabled, accumulation occurs whenever a print operation is performed. Scale must return to zero to re-arm a new print.
THRESH	**0**	Enter a value to be used as divisions. Zero threshold allows you to select a threshold or reset point where automatic printing functions reset themselves to be retriggered. When a value is entered, anything that would normally require the scale to reach zero before it happens/ rearms (except for LFT parameters) now only needs to go below this value and then above it again.
CALIBR	WZERO WVAL WSPAN WLIN REZERO	See Calibration Menu, Figure 3-9.

Table 3-7. Scales Menu Parameters

Scale Calibration Menu

Calibration can be performed in two places within the menu: the CALIBR menu shown in Figure 3-6 on page 26 is an in-depth scale setup and calibration.

A “quick access” calibration is shown in Figure 4-1 on page 55.

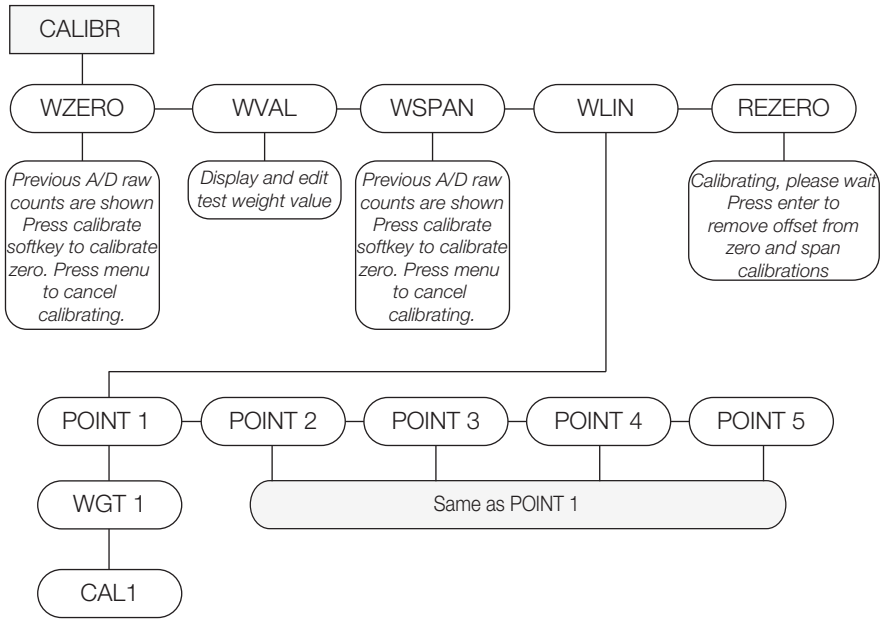

CALIBR
WZERO
WVAL
WSPAN
WLIN
REZERO
Previous A/D raw counts are shown Press calibrate softkey to calibrate zero. Press menu to cancel calibrating.
Display and edit test weight value
Previous A/D raw counts are shown Press calibrate softkey to calibrate zero. Press menu to cancel calibrating.
Calibrating, please wait Press enter to remove offset from zero and span calibrations
POINT 1
POINT 2
POINT 3
POINT 4
POINT 5
WGT 1
Same as POINT 1
CAL1

Figure 3-9. Scale Calibration Menu Layout

Parameter	Choices	Description
WZERO		Allows you to view or change the zero calibration AD count value.
WVAL		Allows you to view and edit the test weight value.
WSPAN		Allows you to view or change the span calibration AD count value.
WLIN	POINT 1-5	Press **ENTER** to display and edit test weight and calibration values for up to five linearization points. Perform linear calibration only after WZERO and WSPAN have been set. Parameters include CAL1 — View or change linear point calibration value. WGT1 — Sets test value.
REZERO		Removes offset from zero and span calibrations. Can be used during a span calibration process using hooks and chains.

Table 3-8. Scale Calibration Menu Parameters

Scale Format Menu

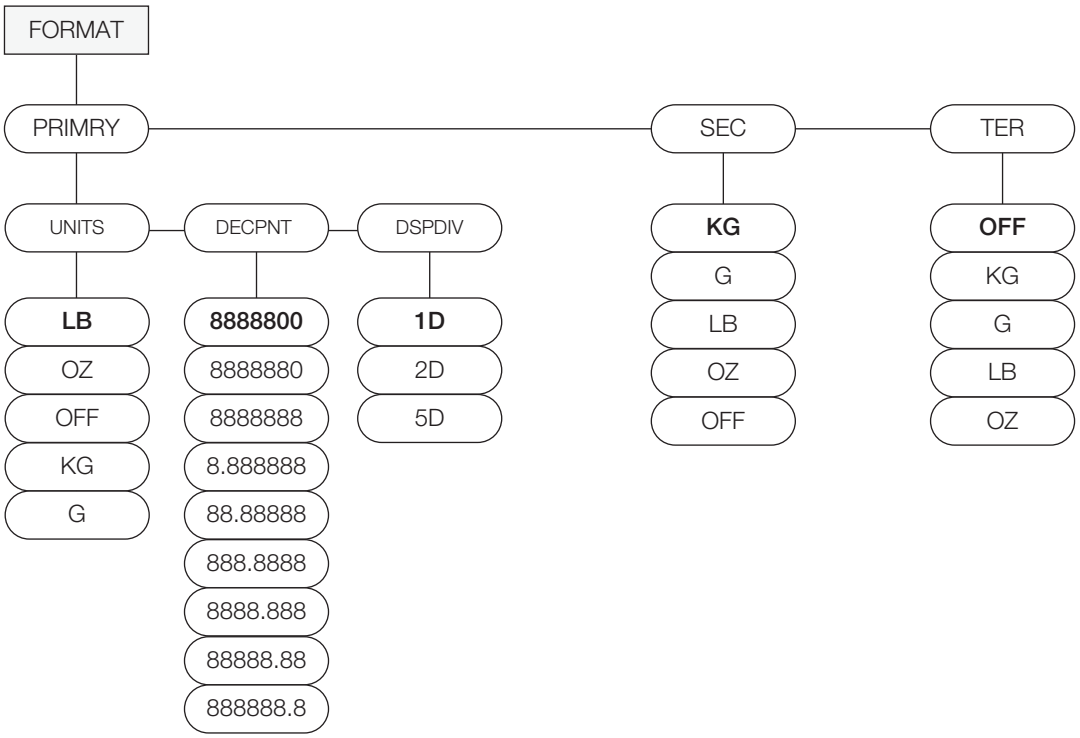


Figure 3-10. Scale Format Menu Layout

Scale Format Menu Parameters		
Parameter	**Choices**	**Description**
PRIMRY	UNITS DECPNT DSPDIV	Allows you to set the primary units, decimal point format, and display divisions.
SEC	**KG** G LB OZ OFF	Allows you to set the secondary units. Decimal point format and display divisions are selected automatically. Values are kg = kilogram (default); g = gram; lb = pound; oz = ounce; and off. Note ***If using the <cu> token and secondary or tertiary values are changed, the stream tokens must be changed to match in order to stream secondary or tertiary.***
TER	**OFF** KG G LB OZ	Allows you to set the tertiary units. Decimal point format and display divisions are selected automatically. Values are off (default); kg = kilogram; g = gram; lb = pound; oz = ounce. Note ***If using the <cu> token and secondary or tertiary values are changed, the stream tokens must be changed to match in order to stream secondary or tertiary.***
Primary, Secondary, Tertiary sub-menu		
UNITS	**LB** OZ KG G OFF	Specifies primary units for displayed and printed weight. Values are lb = pound; oz = ounce; kg = kilogram; g = gram.

Table 3-9. Scale Format Menu Parameters

Scale Format Menu Parameters		
Parameter	**Choices**	**Description**
DECPNT	**8888800** 8888880 8888888 8.888888 88.88888 888.8888 8888.888 88888.88 888888.8	Allows you to place the decimal point position. Use the ID (◁) and TARGET (▷) keys to place the decimal point where desired.
DSPDIV	**1D** 2D 5D	Display divisions. Selects the minimum division size for the primary unit's displayed weight.

Table 3-9. Scale Format Menu Parameters

3.7.2 Feature Menu

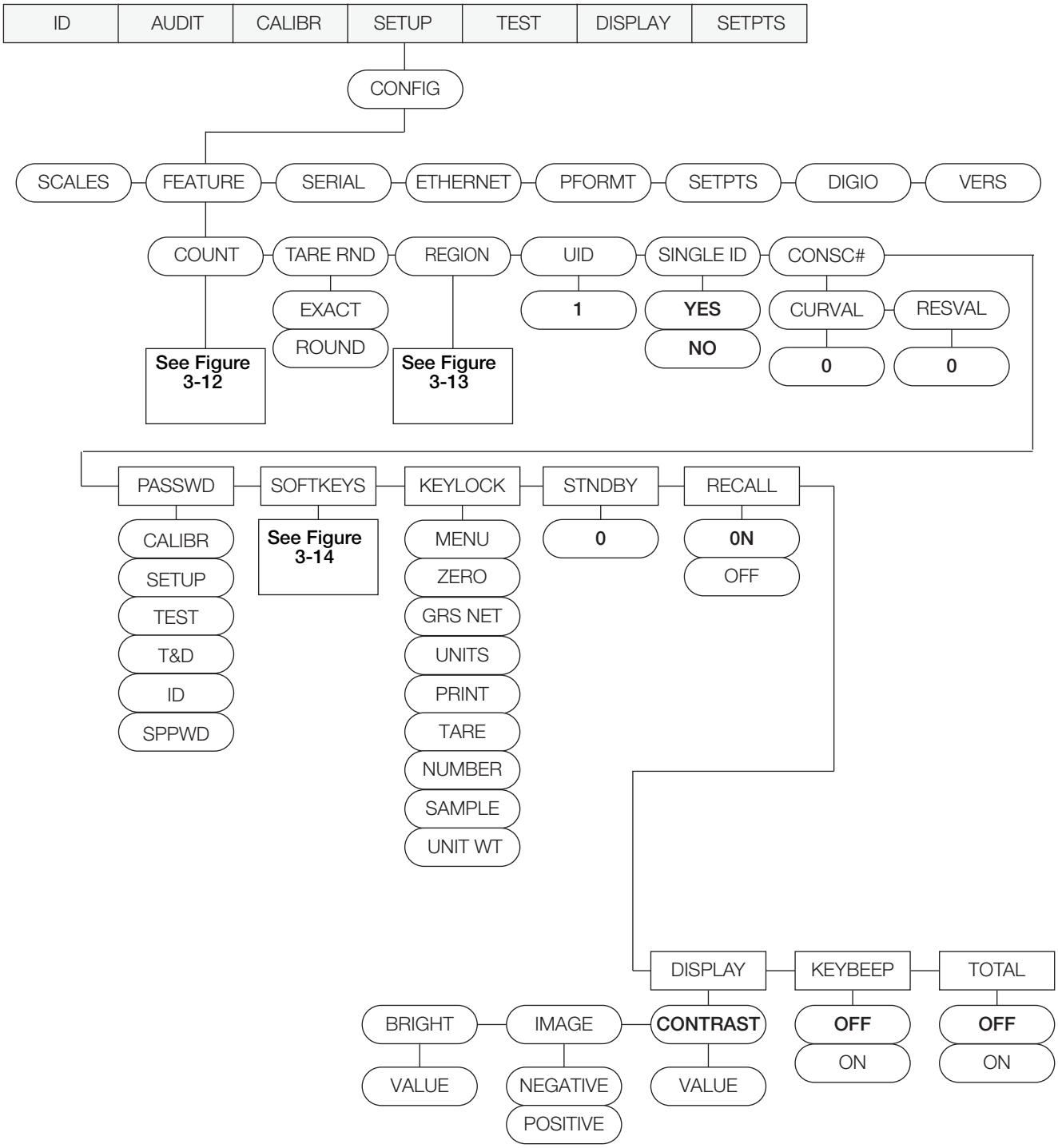


Figure 3-11. FEATUR Sub-menu

Parameter	Choices	Description
COUNT	NEGCOUNT SAMPLEQTY INSFSMPL LOTUPDT SCLCHG NEWITEM XFRSampl DISPACC UNITWTUPDATE UTWTBASE DSP Mode RemovESP	Selects the counting mode (enables/disables negative checkweighing; turns data parameters on/off. See Figure 3-12.
TARE RND	Exact Round	When transferring tare to the second scale, tare value remains the exact weight or rounds to scale resolution.
REGION	REGULA REGWRD DECFMT TIME DATE	Selects regional settings. See Figure 3-13.
UID	**1**	Sets the unit ID, a string of up to 6 ASCII characters, which can be set via serial port or keypad. This will be used in place of the <UID> token in a print format. The default value is 1.
SINGLE ID	Yes No	Allows entry of ID to not be stored. Next ID clears field and establishes new data.
CONSC#	CURVAL RESVAL	Allows sequential numbering for print operations. • CURVAL is the current/starting value • RESVAL is the ending/reset value The consecutive number value is incremented following each print operation that includes <CN> in the ticket format. When the consecutive number is reset, it is reset to the RESVAL specified on the parameter.
PASSWD	CALIBR SETUP TEST T&D ID	Creates a password to access the CALIBR, SETUP, TEST, T&D, and ID menus. Specify a non-zero value to restrict access to all configuration menus. Passwords can be overridden by loading new firmware or entering 999999. Note ***Overriding passwords will clear configuration and calibration settings. To preserve settings (such as ID information), use Revolution software to upload your data to a PC, and then download it back to the indicator after the password override is performed.***
SOFTKEYS	SK1-12	See Figure 3-14.
KEYLCK	MENU ZERO GRSNET UNITS PRINT TARE NUMBER SAMPLE UNIT WT	Disables the MENU, ZERO, GROSS/NET, UNITS, PRINT, TARE numeric, SAMPLE and UNIT WEIGHT keys. Select ***LOCK*** to disable the key, and ***UNLOCK*** to enable the key.
STNDBY	**0**	Standby mode delay. Specifies the number of minutes the indicator must be inactive before entering standby mode. Valid values are 0 (off) through 255 minutes. When in standby mode, power is still supplied to the CPU and draws half of the current as when the display is powered. The display is no longer updated and the backlight is off. Press any key to exit standby mode and reactivate the display.The indicator enters standby mode if no key presses, serial communications, or scale motion occur for the length of time specified in this parameter. Set to 0 to disable standby mode. Note ***If regulatory agency is set for NONE or INDUST, the standby will occur after the specified number of minutes regardless of how much weight is on any of the scales. If regulatory agency is set for NTEP, OIML, or Canada a standby will only occur when the weight on the currently viewed scale is at center of zero.***

Table 3-10. Feature Menu Parameters

Parameter	Choices	Description
RECALL	**ON** OFF	ON allows the Tare, Zero, and Units values to be maintained across a power cycle. Over/Under/Target/ID values are also maintained. OFF clears the values on a power cycle. Zero is reset to calibrated zero and Units are reset to Primary. Over/Under/Target/ID values are reset as well.
DISPLAY	**CONTRAST** BRIGHT IMAGE	Adjusts Counterpart display viewing. Key in a value: BRIGHT — key in a value IMAGE — enter negative or positive
KEYBEEP	**OFF** ON	Select ON to alert the user every time a key is pressed.
TOTAL	**OFF** **ON**	Totalization mode check

Table 3-10. Feature Menu Parameters

Feature Count Menu

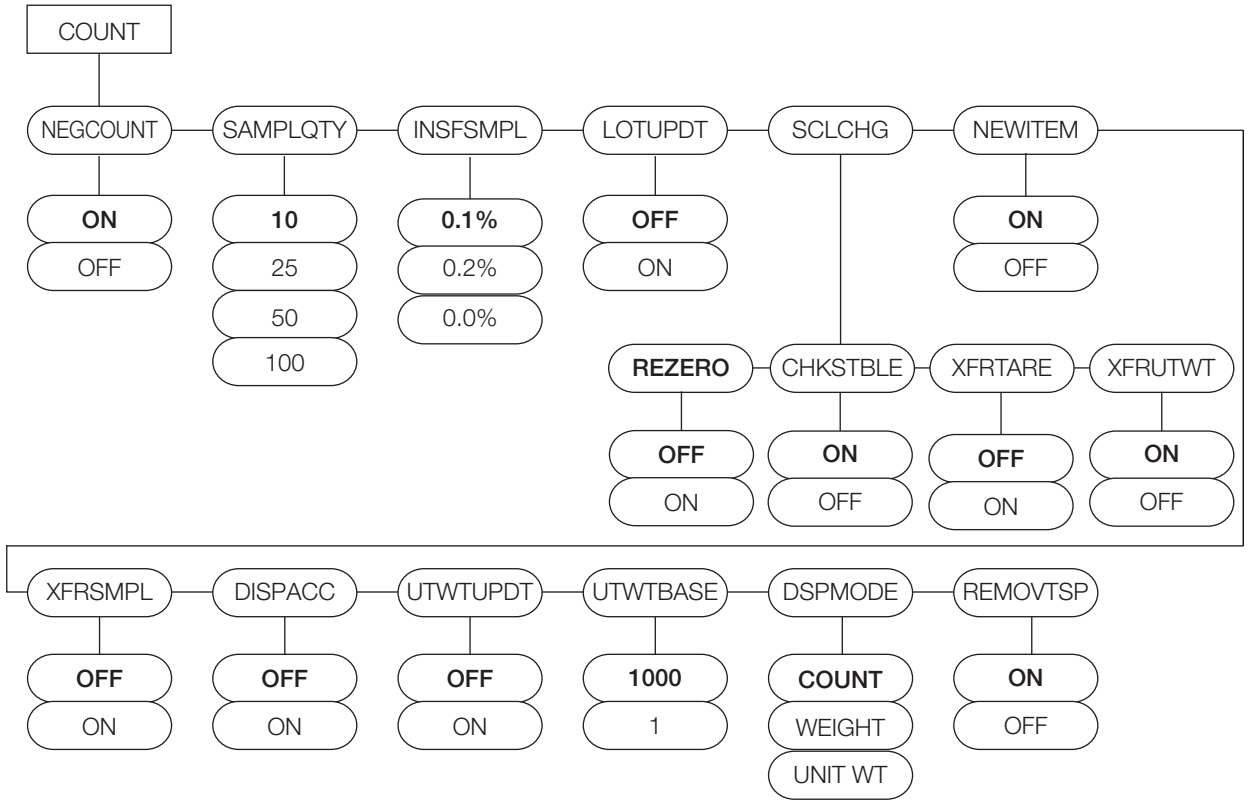


Figure 3-12. Count Menu Layout

Parameter	*Choices*	*Description*
NEGCOUNT	**ON** OFF	Sets whether negative weighing mode is off or on.
SAMPLQTY	**10** 25 50 100	Is the default value for sample quantity.
INSFSMPLE	**0.1** 0.2 0.0	A minimum sample size is required based on the platform capacity and product weight.

Table 3-11. Count Menu Parameters

LOTUPDT	**OFF** ON	OFF — Changing or deleting the lot value in operation mode does not update the stored copy of the currently loaded ID record. ON — Changing or deleting the lot value in operation mode saves the changes into the stored copy of the currently loaded ID record.
SCLCHG	**REZERO** CHKSTABLE XFRTARE XFRUTWT	Scale change. These are actions taken when changing from one scale to another. See SCLCHG sub-menu below.
NEWITEM	**OFF** ON	New item. This prompts user to add an ID to memory when an unknown ID is requested from weigh mode.
XFRSMPL	**OFF** ON	After sample. After a sample, a switch is done from the current scale to the next scale that is larger than or equal to the current scale. If a sample is done on the largest of the scales, a switch will not be done.
DISPACC	**OFF** ON	Display accuracy
UTWTUPDT	**OFF** ON	Enables or disables the updating of the loaded ID with a new unit weight value.OFF — Parts can be sampled (generating a new unit weight) or a unit weight can be keyed or scanned but the new unit weight is not saved into the stored copy of the currently loaded ID record. ON — If on, the unit weight will update the stored value whether at zero or actual value.
UTWTBASE	**1000** 1	Unit weight base. 1 = APW (Average Piece Weight), 1000 = Piece weight per thousand.
DISPMODE	**COUNT** WEIGHT UNITWEIGHT	Display mode. This chooses the value to be displayed as large in viewing window.
REMOVTSP	**ON** OFF	Removes trailing spaces from ID Codes. • ON — If set to on: - an ID code configured through the ID menu will have any entered trailing spaces removed before being stored. - an ID code configured through the ID.CODE EDP command will have any entered trailing spaces removed prior to being stored. - trailing spaces will be removed from an ID Code that is entered via the Code softkey. This includes using the front panel or USB keyboard. - trailing spaces will be removed from an ID Code that is scanned from a barcode. • OFF — If set to off: - an ID code configured through the ID menu will be stored with trailing spaces as entered - an ID code configured through the ID.CODE.EDP command will be stored with trailing spaces as entered. - an ID code entered via the Code softkey for recall will retain any trailing spaces. This includes using the front panel or USB keyboard. - an ID Code scanned from a barcode for recall will retain any trailing spaces
SCLCHG submenu		
REZERO	**OFF** ON	Performs a zero function on change.
CHKSTBLE	**ON** OFF	When changing scales, a stability check can be either enabled or disabled. If enabled, and the stability check is successful, no indication is shown and the unit switches to the next scale. If enabled and the stability check fails, then NON-STABLE is shown on the display and the switch to the next scale is not made.
XFRTARE	**OFF** ON	When changing scales, the tare weight is transferred from the current scale to the new scale. Units must be set to the same unit of measurement.
XFRUTWT	**ON** OFF	When changing scales, the unit weight is transferred from the current scale to the new scale.

Table 3-11. Count Menu Parameters

Feature Region Menu

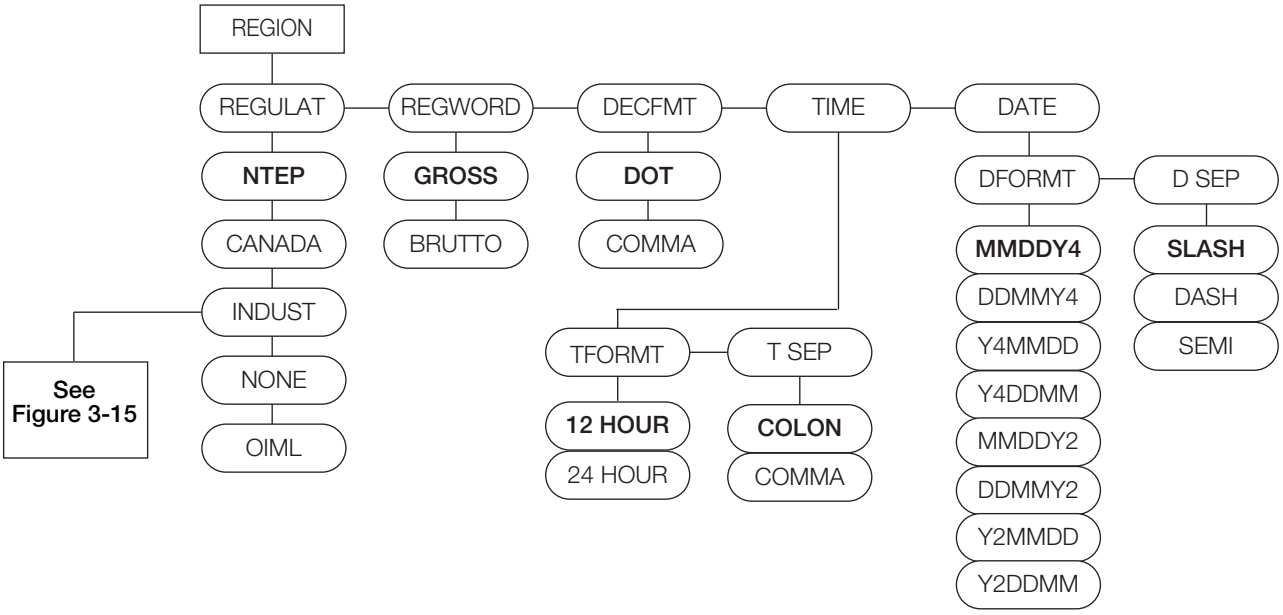


Figure 3-13. Region Menu Layout

Parameter	*Choices*	*Description*
REGULA	**NTEP** CANADA INDUST NONE OIML	Regulatory mode. Specifies the regulatory agency having jurisdiction over the scale site. ***The value specified for REGULA affects the function of the front panel TARE and ZERO keys.*** • OIML, NTEP, and CANADA modes allow a tare to be acquired at any weight greater than zero. NONE allows tares to be acquired at any weight value. • OIML, NTEP, and CANADA modes allow a tare to be cleared only if the gross weight is at no load. NONE allows tares to be cleared at any weight value. • NTEP and OIML modes allow a new tare to be acquired even if a tare is already present. In CANADA mode, the previous tare must be cleared before a new tare can be acquired. • NONE, NTEP and CANADA modes allow the scale to be zeroed in either gross or net mode as long as the current weight is within the specified ZRANGE. In OIML mode, the scale must be in gross mode before it can be zeroed; pressing the ZERO key in net mode clears the tare. • INDUST provides a set of subparameters to allow customization of tare, clear, and print functions in non-legal-for-trade scale installations. When in legal-for-trade mode, refer to Section 9.10 on page 98 for more information on using this feature.
REGWOR	**GROSS** BRUTTO	Sets the term printed when weighing in gross mode. Selecting BRUTTO replaces *Gross* with *Brutto*.
DECFMT	**DOT** COMMA	Specifies whether decimal numbers are displayed using a period (DOT) or a comma.
TIME	**TFORMT** T SEP	Allows you to set the current time, and the time format and separator character. See Time sub-menu below.
DATE	**DFORMT** D SEP	Allows you to set the current date, and date format and date separator character.
Time sub-menu		
TFORMT	**12 HOUR** 24 HOUR	Sets the time format.
T SEP	**COLON** COMMA	Sets the time separator as a colon or a comma.

Table 3-12. Region Menu Parameters

Date sub-menu		
DFORMT	**MMDDY4** DDMMY4 Y4MMDD Y4DDMM MMDDY2 DDMMY2 Y2MMDD Y2DDMM	Sets the date format. Y4 will use a four-digit year value, such as 2011, while Y2 will use a two-digit value, such as 11.
D SEP	**SLASH** DASH SEMI	Sets the date separator as a slash, dash, or semicolon.

Table 3-12. Region Menu Parameters

SOFTKEYS Menu

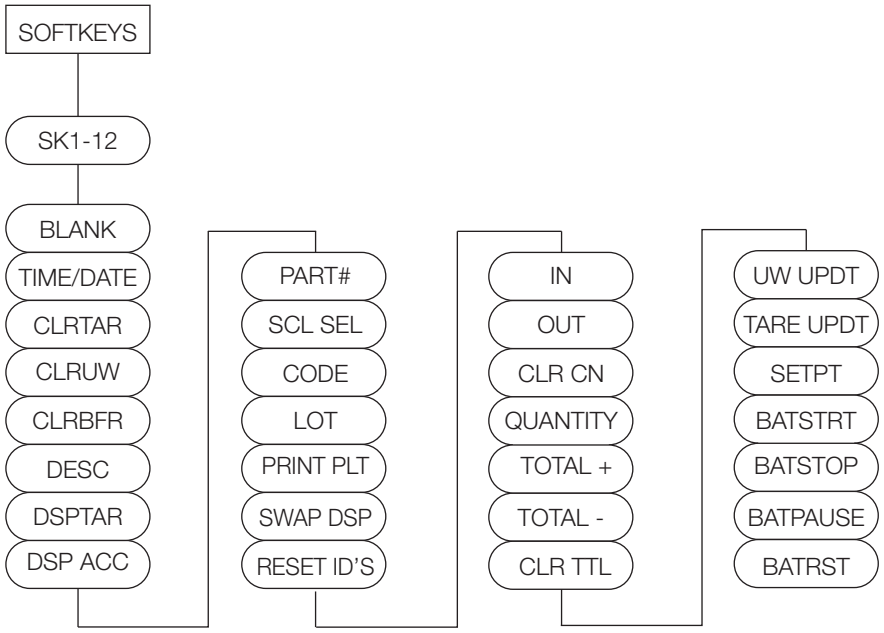


Figure 3-14. Softkey Menu Layout

Parameters	Descriptions
BLANK	No softkey function selected
TIMEDATE	Allows user to set time and date
CLRTAR	Clear tare
CLRUW	Clear unit weight value
CLRBFR	Clear buffer.
DESC	Description update.
DSPTAR	Display tare value (times out after 10 seconds)
DSPACC	Display accumulated weight value (may be printed or cleared while displayed) – times out after 10 seconds
PART #	Part number entry.
SCLSEL	Allows user to select scale 1, scale 2 for displayed weight,count in multi-scale unit

Table 3-13. Softkey Menu Parameters

Parameters	Descriptions
CODE	Press CODE, enter ID number, press ENTER to recall stored item code. If item code does not exist, will prompt “Item not found, Save as New ID?” Pressing YES will store in first available register. Alpha ON/OFF softkey appears to turn off Alpha to process numbers quicker when not using Alpha.
LOT	Allows user to add lot number to stored item code on the fly (if enabled to do so)
PRINTPLT	Allows user to print a pallet label
SWAPDSP	Allows user to swap large display between weight, count, unit weight
RESET ID’S	Reset or clear ID’s/codes.
IN	Used to add, subtract count from inventory value (local or WeighVault)
OUT	
CLRCN	Sets consecutive number back to RESVAL (beginning reset value)
QUANTITY	Update quantity for IN/OUT inventory database.
TOTAL+	Used with totalization mode or parts reduction count mode to add or subtract items from total accumulated count. CLRTTL will clear the totalized value.
TOTAL-	
CLRTTL	
UWUPDT	Update stored unit weight or tare weight for currently loaded item code
TAREUPDT	
SETPT	Change setpoint value
BATSTRT	Batch start
BATSTOP	Batch stop
BATPAUSE	Pause batch
BATRST	Reset batch

Table 3-13. Softkey Menu Parameters

Regulate Industry Menu

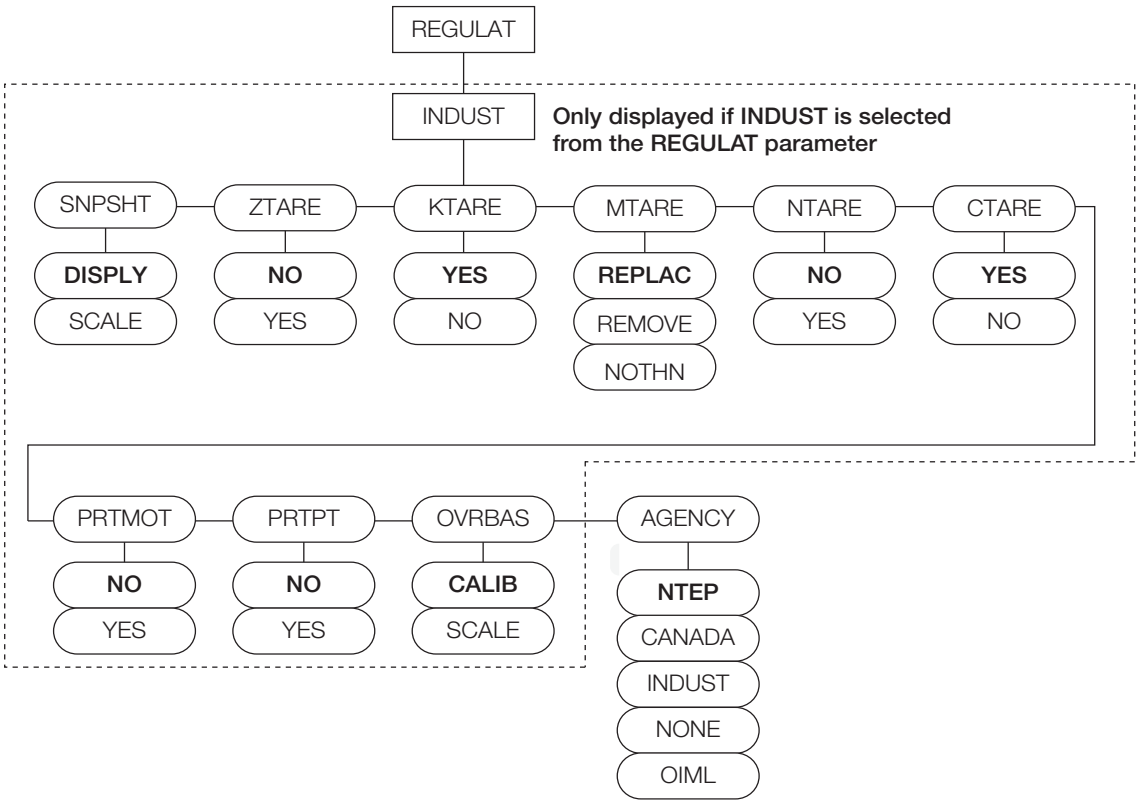


Figure 3-15. Regulate Industry Menu Layout

Parameter	Choices	Description
SNPSHT	**DISPLY** SCALE	Display or scale weight source.
ZTARE	**NO** YES	Remove tare on ZERO.
KTARE	**YES** NO	Always allow keyed tare.
MTARE	**REPLAC** REMOVE NOTHIN	Multiple tare action.
NTARE	**NO** YES	Allow negative or zero tare.
CTARE	**YES** NO	Allow CLEAR key to clear tare/accumulator.
PRTMOT	**NO** YES	Allow print while in motion.
PRTPT	**NO** YES	Add PT to keyed tare print.
OVRBAS	**CALIB** SCALE	Zero base for overload calculation. CALIB = Calibrate Zero SCALE = Scale Zero
AGENCY	**NTEP** CANADA INDUST NONE OIML	Selects the agency having jurisdiction over the scale site. • OIML, NTEP, and CANADA modes allow a tare to be acquired at any weight greater than zero. NONE allows tares to be acquired at any weight value. A tare can be cleared only if the gross weight is at no load. NONE allows tares to be cleared at any weight value. • NTEP and OIML modes allow a new tare to be acquired even if a tare is already present. In OIML mode, printing is not allowed if the scale is more than -20dd. In CANADA mode, the previous tare must be cleared before a new tare can be acquired. • NONE, NTEP and CANADA modes allow the scale to be zeroed in either gross or net mode as long as the current weight is within the specified ZRANGE. In OIML mode, the scale must be in gross mode before it can be zeroed; pressing ZERO in net mode clears the tare. • INDUST provides a set of subparameters to allow customization of tare, clear, and print functions in non-legal-for-trade applications. The value specified for this parameter affects the function of the front panel TARE and ZERO keys. See Section 9.9 on page 97 for more information. When in legal-for-trade mode, refer to Section 9.10 on page 98 for more information.

Table 3-14. Regulate Industry Menu Parameters

3.7.3 Serial Menu

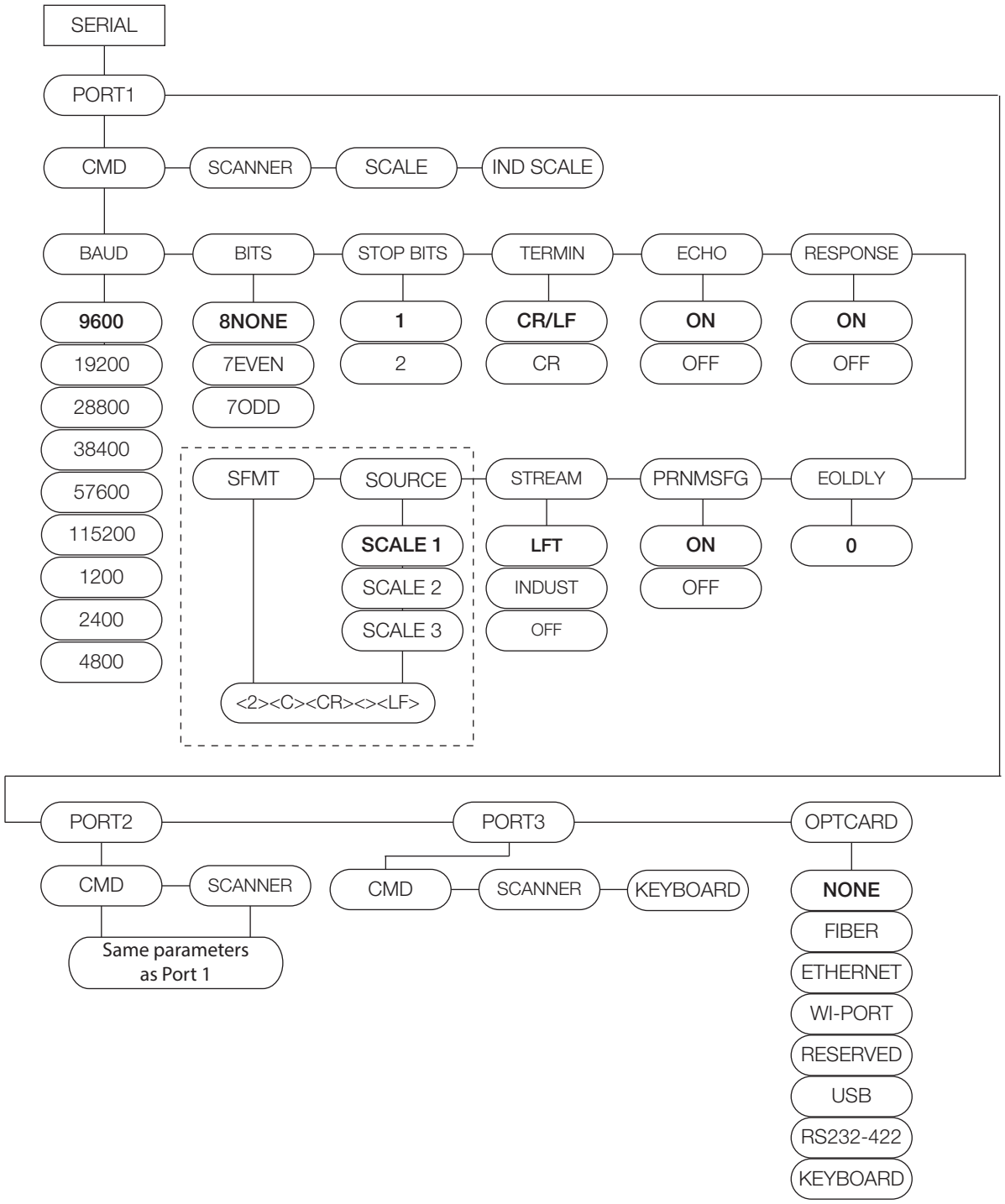


Figure 3-16. Serial Menu Layout

Parameter	Choices	Description
PORT 1 PORT 2 PORT 3	CMD SCANNER SCALE IND SCALE KEYBOARD	Specifies Port 1 through 3's mechanism for triggering a transmission of data, print message, baud rate, bits, stop bits, termination character, end-of-line delay, and echo. See Ports sub-menus for parameter descriptions.

Table 3-15. Serial Menu Parameters

Parameter	Choices	Description
OPTCARD	NONE FIBER ETHERNET WI-PORT RESERVED USB RS232-432 KEYBOARD	Option card parameters. Indicates which connection can be selected when using a wireless option card and WeighVault. Note ***When setting up the USB option and opening Revolution, you may be asked to load a driver if Windows PC has never used a USB driver before.***
Ports sub-menus		
CMD	 BAUD BITS STOP BITS TERMIN ECHO RESPONSE EOLDLY STREAM **SOURCE **SFMT	Sets up the transmission information for the command. Note ***For SOURCE and SFMT to appear on menu, first configure the STREAM parameter for either LFT (legal-for-trade) or INDUST (Industrial).***
SCANNER	BAUD BITS STOP BITS TERMIN HEADERS	Sets up the transmission information for the scanner.
SCALE	BAUD BITS STOP BITS TERMIN EOLDLY SFMT	Sets up the transmission information for scale 3.
IND SCALE	BAUD BITS STOP BITS TERMIN EOLDY SFMT	Sets up the transmission information for the industrial scale parameter.
KEYBOARD	BAUD BITS STOP BITS	Sets up the communication information for the USB keyboard option.

Table 3-15. Serial Menu Parameters

3.7.4 Ethernet Menu

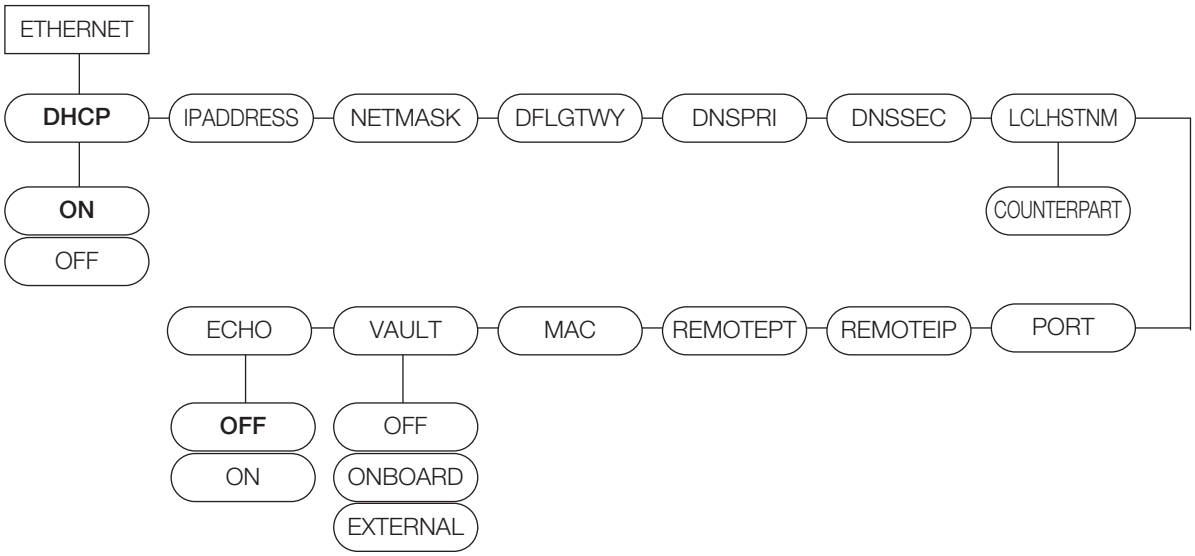


Figure 3-17. Ethernet Menu Layout

Parameter	Choices	Description
DHCP	ON OFF	Dynamic Host Configuration Protocol ON — obtains IP address, primary and secondary DNS IP addresses, netmask, and default gateway IP address from a DHCP server. OFF — uses static settings for the above parameters.
IPADRESS		IP address. This can be leased (provided by DHCP server) or statically set.
NETMASK		Subnet address
DFFLTGTWY		IP address for default gateway
DNSPRI		Primary domain server IP address
DNSSEC		Secondary domain server IP address
LCLHSTNM	Counterpart	Counterpart local host name
PORT		Port number used
REMOTEIP		Remote IP address using WeighVault
REMOTEPT		Remote port number using WeighVault
MAC		Views the MAC address and is non-changeable.
VAULT	OFF ON BOARD EXTERNAL	Selects on or off Using onboard RJ45 Ethernet connection Using wireless port connection **Note** ***Softkey shown to clear weigh vault batter.***
ECHO	ON OFF	Allows Echo to be on or off.

3.7.5 Print Format Menu

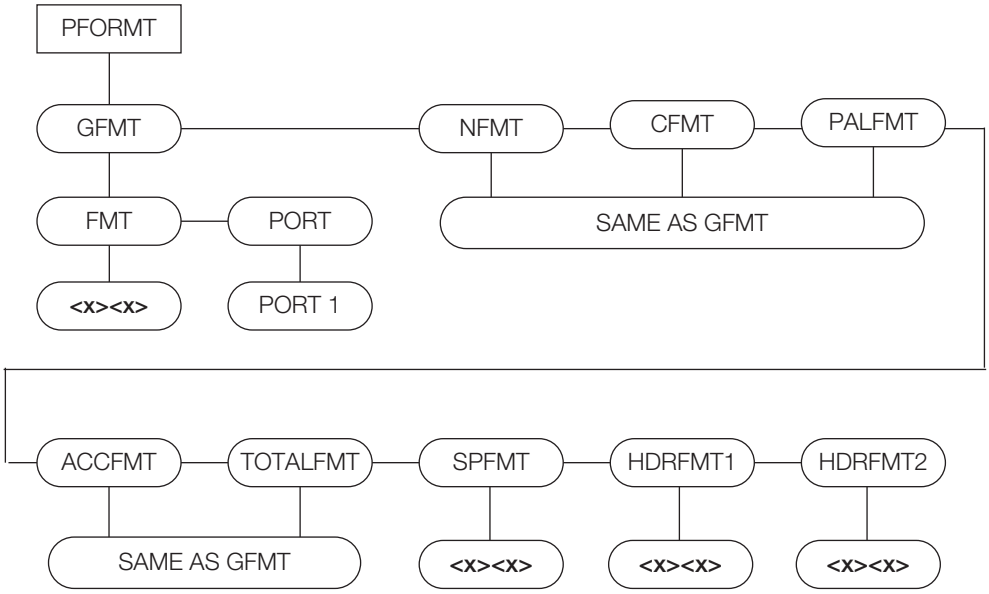


Figure 3-18. Print Format Menu

Parameter	Choices	Description
PFORMT		Sets the print format for gross weight mode, net weight mode, count, pallet, accumulate, total, setpoint, header 1 and header 2.
	GFMT	Gross format
	NFMT	Net format
	CFMT	Count format
	PALFMT	Pallet format
	ACCFMT	Accumulator format
	TOTALFMT	Total format
	HDRFMT1	Header 1 format
	HDRFMT2	Header 2 format

Table 3-16. Print Format Menu Parameters

3.7.6 Scale Setpoints Menu

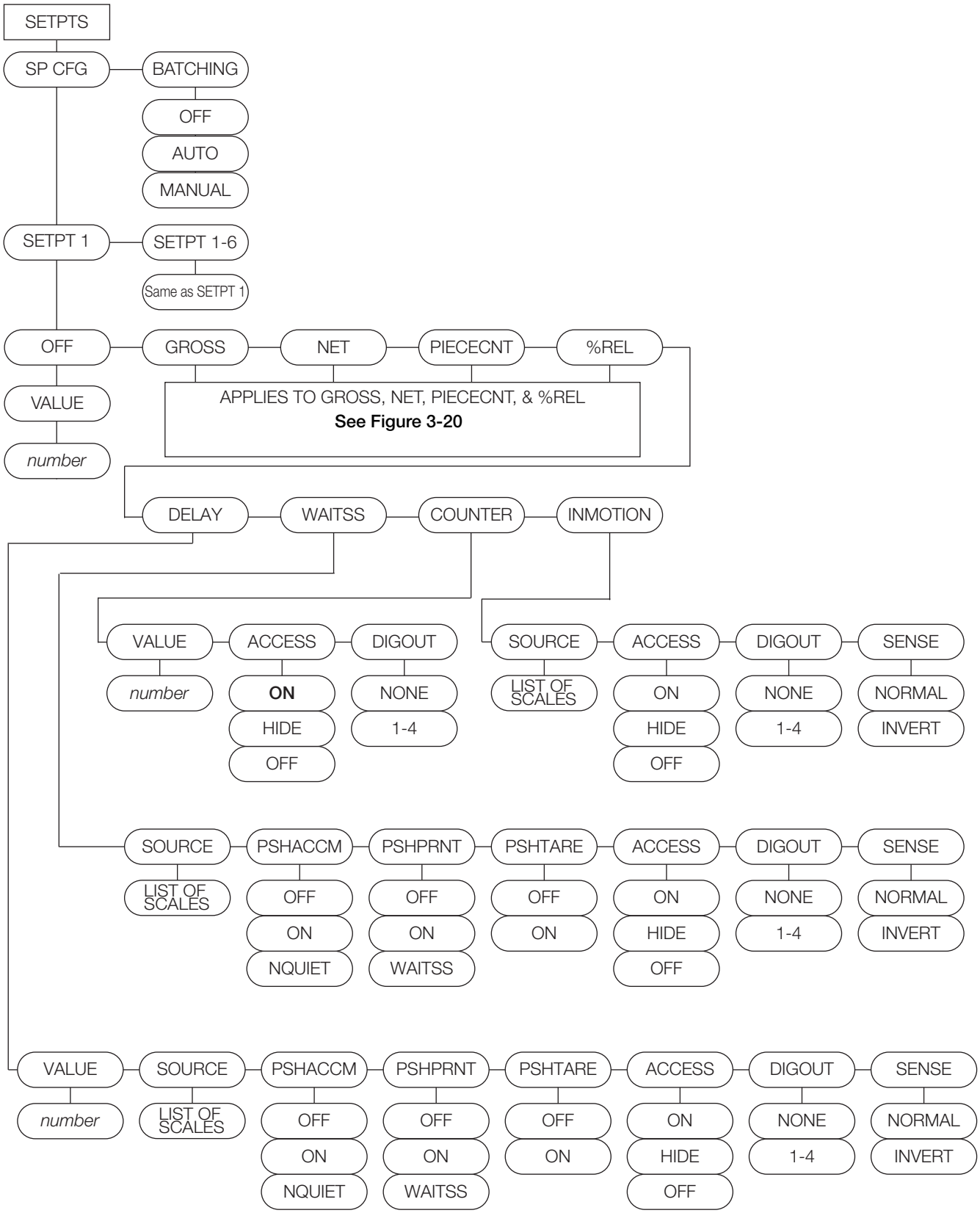


Figure 3-19. Setpoints Menu

Gross, Net, Piecent, %REL Sub-menu

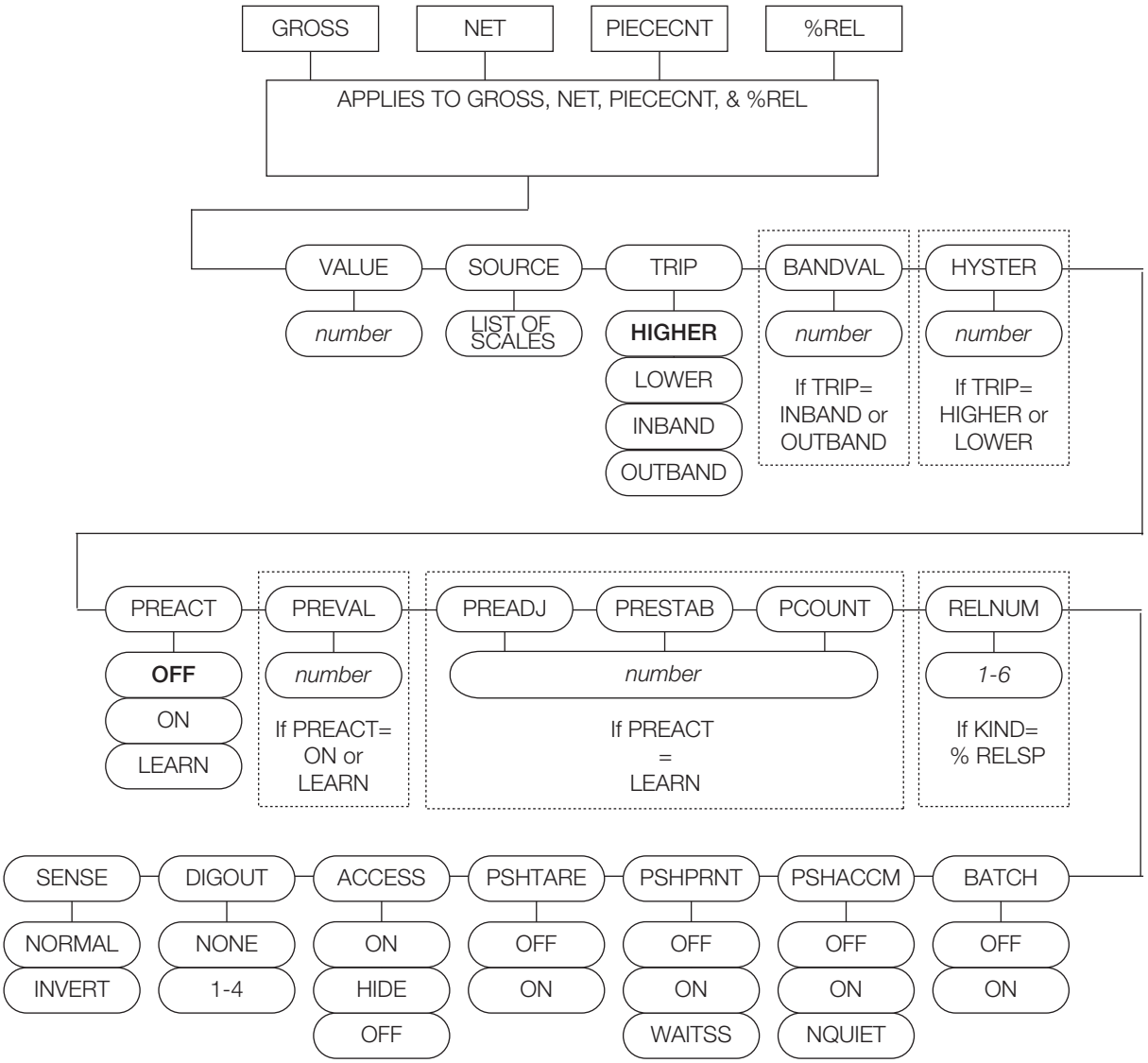


Figure 3-20. Gross, Net, Piecent, %REL Sub-menu

Parameters	Choices	Description
SP CFG	**SETPT 1** SETPT 2-6	Specifies the settings for GROSS, NET, PIECECNT, % REL, delay, waitss, counter and inmotion used by setpoints 1 through 6.
BATCHING	OFF AUTO MANUAL	Batching enable. Set to AUTO or MANUAL to allow a batch sequence to run. MANUAL requires a Batch Start softkey before the batch sequence can run. AUTO allows batch sequences to repeat continuously.
SP CFG subenu		
SETPT1-6	OFF GROSS NET PIECECNT %REL DELAY WAITSS COUNTER INMOTION	Specifies the setpoint kind. GROSS, NET, PIECECNT, and %REL setpoint kinds can be used as either batch or continuous setpoints. DELAY, WAITSS, and COUNTER setpoint kinds can only be used in batch sequences. The INMOTION setpoint kind can only be used as a continuous setpoint.

Table 3-17. Scale Setpoint Menu Parameters

Parameters	Choices	Description
Setpoint 1-6 submenu		
OFF	Value = number	
GROSS NET PIECECNT %REL	Value Source Trip Bandval Hyster Preact Preval Preadj Prestab Pcount Relnum Batch Pshaccm Pshprint Pshtare Access Digout Sense	Display and edit the gross value
DELAY	Value Source Pshaccm Pshprint Pshtare Access Digout Sense	
WAITSS	Source Pshaccm Phsprint Pshtare Access Digout Sense	
COUNTER	Value Access Digout	
INMOTION	Source Access Digout Sense	
Off, Gross, Net, Peicecnt, %Rel, Delay, Waitss, Counter and Inmotion submenus		
VALUE	number	
SOURCE	List of available scales	Specifiy the scale number used as the source for the setpoint.
TRIP	Higher Lower Inband Outband	Specifies whether the setpoint is satisfied when the weight is higher or lower than the setpoint value, within a band established around the value, or outside of that band. In a batch sequence with TRIP = HIGHER, the associated digital output is active until the setpoint value is reached or exceeded; with TRIP = LOWER, the output is active until the weight goes below the setpoint value.
BANDVAL	number	
HYSTER	number	Specifies a band around the setpoint value that must be exceeded before the setpoint, once off, can trip on again.

Table 3-17. Scale Setpoint Menu Parameters

Parameters	Choices	Description
PREACT	Off On Learn	Allows the digital output associated with a setpoint to shut off before the setpoint is satisfied to allow for material in suspension. The ON value adjusts the setpoint trip value up or down (depending on the TRIP parameter setting) from the setpoint value using a fixed value specified on the PREVAL parameter. The LEARN value can be used to automatically adjust the preact value after each batch. LEARN compares the actual value at standstill to the target setpoint value, and then adjusts the preact PREVAL by the PREADJ value times the difference after each batch.
PREVAL		
PREADJ	0.500000 *0-9999999*	Preact adjustment factor. For setpoints with PREACT set to LEARN, specifies a decimal representation of the percentage of error correction applied (0.05 = 50%, 1.0 - 100%) each time a PREACT adjustment is made.
PRESTAB	0 *0-65535*	Preact stabilization time-out. For setpoints with PREACT set to LEARN, specifies the time, in 0.1-second intervals, to wait for standstill before adjusting the PREACT value. Setting this parameter to a value greater than zero disables the learn process if standstill is not achieved in the specified interval.
PCOUNT	1 *0-65535*	Preact learn interval. For setpoints with PREACT set to LEARN, specifies the number of batches after which the preact value is recalculated. The default value, 1, recalculates the preact value after every batch cycle.
RELNUM	1 2 3 4 5 6	For the percent relative setpoint, specifies the number of the relative setpoint. The target weight for the %REL setpoint is determined as the percentage (specified on the VALUE parameter of the %REL setpoint) of the target value of the relative setpoint.
BATCH	Off On	Specifies whether the setpoint is used as a batch (ON) or continuous (OFF) setpoint.
PSHACCM	Off On ONquiet	Specifiy ON to update the accumulator and perform a print operation when the setpoint is satisfied. Specify ONQUIET to update the accumulator without printing.
PSHPRNT	Off On Waitss	Specify ON to perform a print operation when the setpoint is satisfied; specify WAITSS to wait for standstill after setpoint is satisfied before printing.
PSHTARE	Off On	Specify ON to perform an acquire tare operation when the setpoint is satisfied. Note that PSHTARE acquires the tare regardless of the value specified for the REGULAT parameter on the FEATUR menu.
ACCESS	On Hide Off	Specifies the access allowed to setpoint parameters shown by pressing the Setpoint softkey in normal mode. ON: Values can be displayed and changed. HIDE: Values cannot be displayed or changed. OFF: Values can be displayed but not changed.
DIGOUT	None 1-4	Lists all digital output bits available. This parameter is used to specify the digital output bit associated with this setpoint. Use the DIGI/O menu to assign bit function to OUTPUT. For continuous setpoints, the digital output becomes active (low) when the condition is met; for batch setpoints, the digital output is active *until* the setpoint condition is met.
SENSE	Normal Invert	Specifies whether the value of the digital output associated with this setpoint is inverted when the setpoint is satisified.

Table 3-17. Scale Setpoint Menu Parameters

3.7.7 DIG I/O Menu

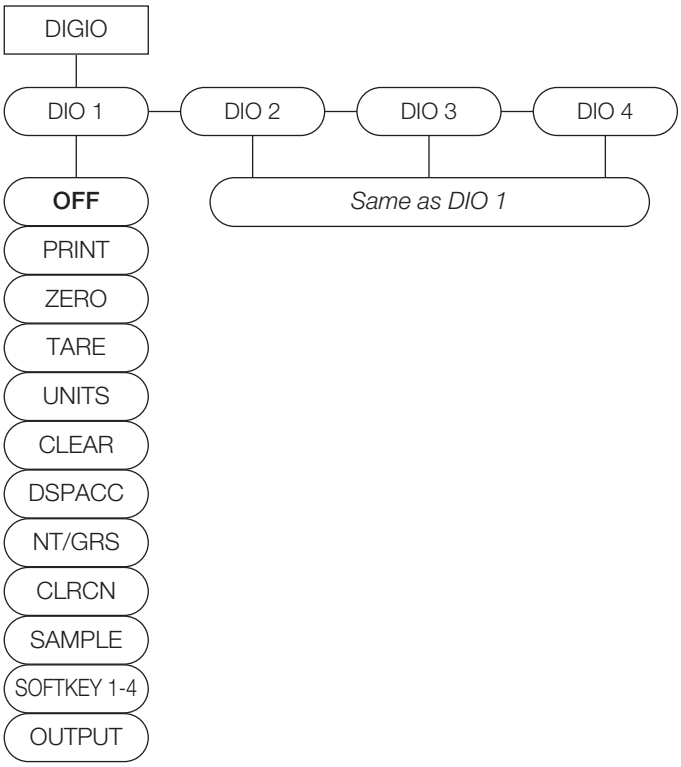


Figure 3-21. Digital I/O Menu Layout

Parameter	Choices	Description
DIG IO	DIO 1 DIO 2 DIO 3 DIO 4	Assign digital input/output functions.
DIO 1-4 sub-menu		
DIO 1-4	**OFF** PRINT ZERO TARE UNITS CLEAR DSPACC NT/GRS CLRCN SAMPLE SFTKEY1 SFTKEY2 SFTKEY3 SFTKEY4 OUTPUT	Digital I/O functions

3.7.8 Version Menu

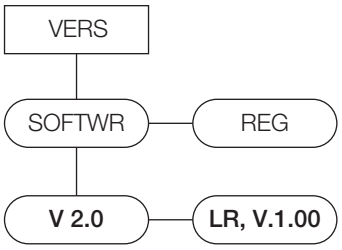


Figure 3-22. Version Menu Layout

Parameter	Choices	Description
VERS	SOFTWR	Software version. **2.xx**
	REG	Regulatory version. LR, V 1.XX

Table 3-18. Version Menu Parameters

3.8 Test Menu

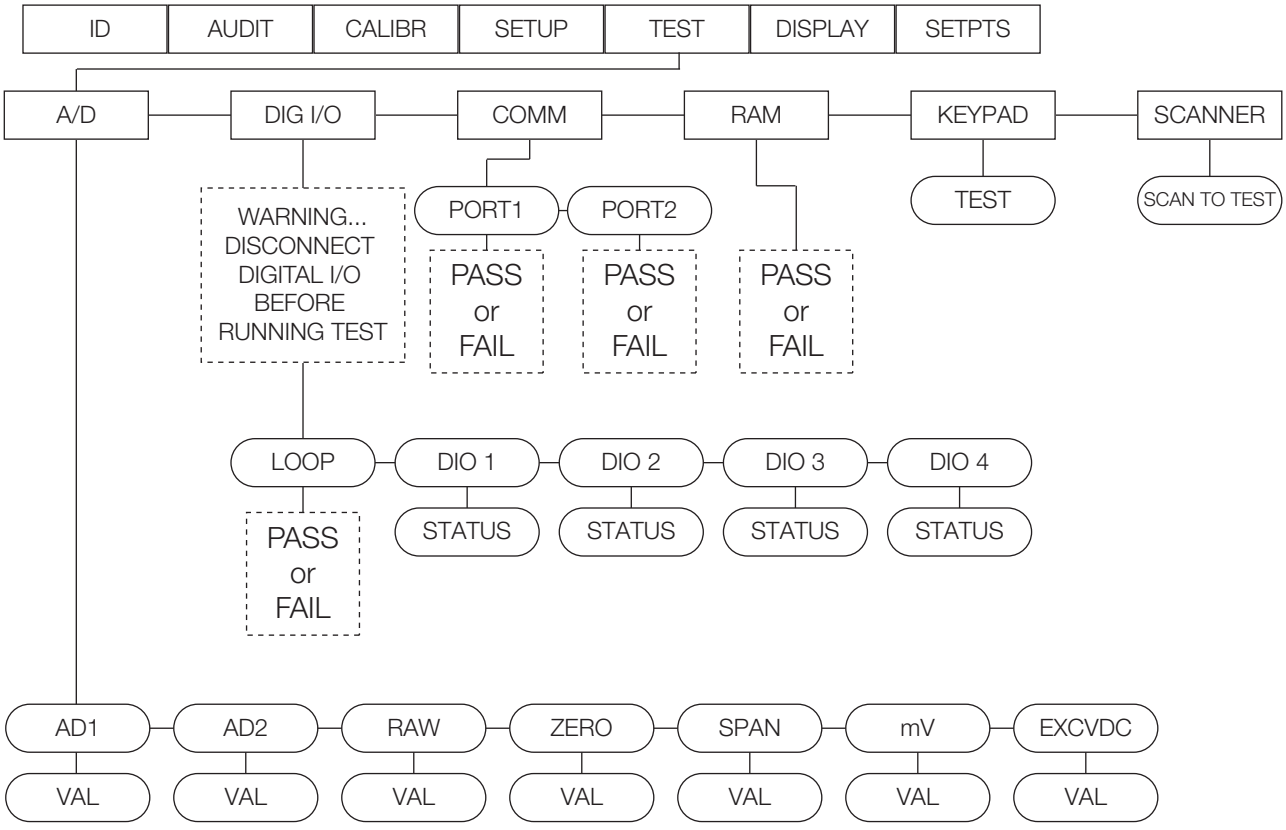


Figure 3-23. Test Menu

Parameter	Choices	Description
A/D	AD1 AD2 EXCVAC	Gives details of current or live A/D counts as well as stored zero and span A/D values. Shows voltage levels for signal and excitation voltages.

Table 3-19.

Parameter	Choices	Description
DIG I/O	LOOP DIO 1 DIO 2 DIO 3 DIO 4	Tests your digital I/O ports. If they are functioning, PASS is displayed. If they are not functioning, FAIL is displayed. **Note** ***Both inputs and outputs are active low. They go to a ground state when active.*** **WARNING** ***The I/O ports become activated when the test is performed. Make sure any equipment is disconnected prior to performing this test to avoid inadvertently activating it.***
COMM	PORT1 PORT2	Performs a loop-back test on the serial ports. If they are functioning, PASS is displayed. If they are not functioning, FAIL is displayed.
RAM	TEST	Tests the unit's memory. If it is functioning, PASS is displayed. If it is not functioning, FAIL is displayed.
KEYPAD	TEST	Tests the unit's individual keypad buttons by displaying the name of the key pressed. If nothing is displayed, the key is not functioning. Press the Menu key to exit the test.
SCANNER	TEST	Displays scanned value with control characters.
A/D sub-menus		
RAW	VAL	Displays the live current raw AD count.
ZERO	VAL	Displays the captured AD Zero calibration value.
SPAN	VAL	Displays the captured AD Span calibration value.
mV	VAL	Displays the live current millivolt signal voltage.
EXCVDC	VAL	Displays the current excitation voltage.
LOOP	TEST	Performs a loop test on dig I/O cards.
DIO 1 DIO 2 DIO 3 DIO 4	STATUS	Displays the status of each individual digital I/O port. If set as input, the display shows input stats IN HI or IN LO. If set as output, pressing **Enter** toggles the output between HI and LO. OUT HI or OUT LO. OUT LO is active.
PORT1 PORT2	TEST	Performs a loopback test on serial port 1 or 2. Connect jumper TX and RX together on port 1 or port 2 before testing.

Table 3-19.

3.9 Display Menu

There are three display settings on the *Counterpart*.

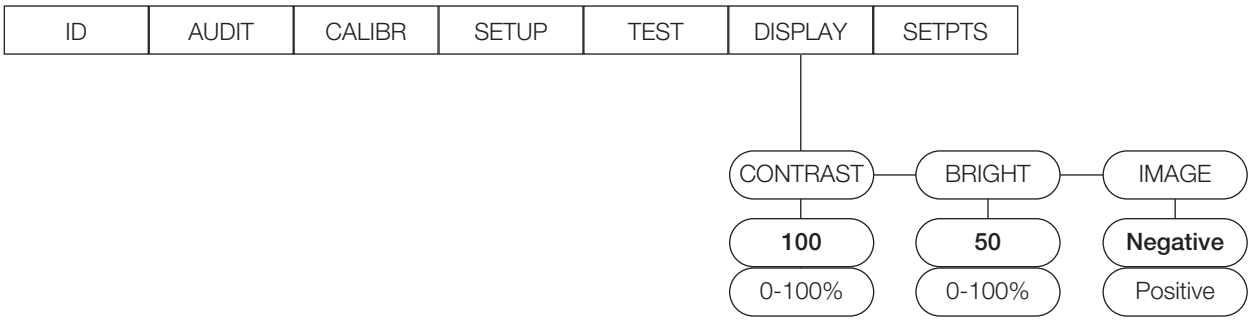


Figure 3-24. DISPLAY Menu

Setting the display parameters from this top level menu is temporary. After a power cycle, the values will revert to their previous values. Changes made to these parameters through the CONFIG menu are kept through a power cycle.

3.10 Setpoints – Weigh Mode Parameter Menu

Set up of setpoints is allowed while in the weigh mode.

While setting up setpoints, the Access parameter needs to be set to either On or Off.

- Setting it to **On** allows a setpoint to be viewed and edited if setpoint type is Gross, Net, Piececnt, %Rel, Delay, or Counter.
- Setting it to **Off** allows a setpoint to be viewed but not edited if the setpoint type is Gross, Net, Piececnt, %Rel, Delay, or Counter.
- Hide will not show the setpoint.

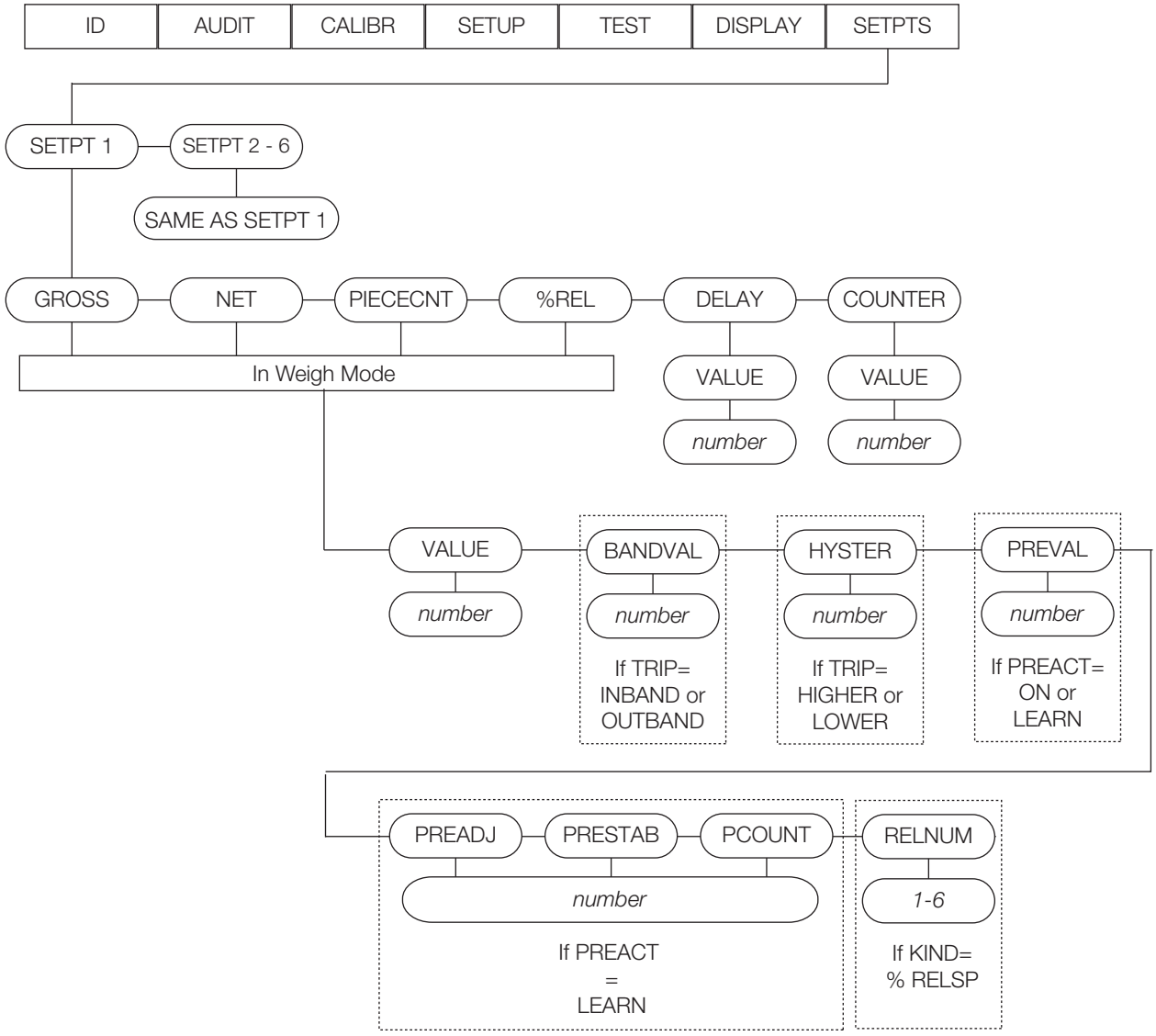


Figure 3-25. Setpoint Menu in Weigh Mode

Parameters	Choices	Description
SETPT1-6	OFF GROSS NET PIECECNT %REL DELAY WAITSS COUNTER INMOTION	Specifies the setpoint kind. GROSS, NET, PIECECNT, and %REL setpoint kinds can be used as either batch or continuous setpoints. DELAY, WAITSS, and COUNTER setpoint kinds can only be used in batch sequences. The INMOTION setpoint kind can only be used as a continuous setpoint.

Table 3-20. Setpoint Menu Parameters in Weigh Mode

Parameters	Choices	Description
Setpoint 1-6 sub-menu		
GROSS NET PIECECNT %REL	Value Source Trip Bandval Hyster Preact Preval Preadj Prestab Pcount Relnum Batch Pshaccm Pshprint Pshtare Access Digout Sense	Display and edit the gross value
DELAY	Value Source Pshaccm Pshprint Pshtare Access Digout Sense	
COUNTER	Value Access Digout	
Gross, Net, Peicecnt, %Rel, Delay and Counter sub-menus		
VALUE	number	
BANDVAL	number	
HYSTER	number	Specifies a band around the setpoint value that must be exceeded before the setpoint, once off, can trip on again.
PREVAL	number	
PREADJ	0.500000 *0-9999999*	Preact adjustment factor. For setpoints with PREACT set to LEARN, specifies a decimal representation of the percentage of error correction applied (0.05 = 50%, 1.0 - 100%) each time a PREACT adjustment is made.
PRESTAB	0 *0-65535*	Preact stabilization time-out. For setpoints with PREACT set to LEARN, specifies the time, in 0.1-second intervals, to wait for standstill before adjusting the PREACT value. Setting this parameter to a value greater than zero disables the learn process if standstill is not achieved in the specified interval.
PCOUNT	1 *0-65535*	Preact learn interval. For setpoints with PREACT set to LEARN, specifies the number of batches after which the preact value is recalculated. The default value, 1, recalculates the preact value after every batch cycle.
RELNUM	1 2 3 4 5 6	For the percent relative setpoint, specifies the number of the relative setpoint. The target weight for the %REL setpoint is determined as the percentage (specified on the VALUE parameter of the %REL setpoint) of the target value of the relative setpoint.

Table 3-20. Setpoint Menu Parameters in Weigh Mode

4.0 Calibration

The *Counterpart* can be calibrated using the front panel, EDP commands, or Revolution®.

Note ***Calibration can be performed in two places within the menu: the CALIBR menu shown in Figure 4-1 and the SCALE sub-menu shown in Figure 3-8 on page 28. The CALIBR menu shown in Figure 4-1 is a "quick access" calibration; for more in-depth scale setup and calibration, use the menus found under SETUP/CONFIG/SCALE (see Figure 3-8 on page 28).***

Calibration consists of the following steps:

- Zero calibration
- Entering the test weight value
- Span calibration
- Optional five-point linearization
- Optional rezero calibration for test weights using hooks or chains.

Note ***The Counterpart requires the WZERO and WSPAN points to be calibrated. The linearity points are optional, but must not duplicate zero or span. During calibration, the TARE (Enter) key acts as a data entry confirmation key. The soft calibrate key accepts that value.***

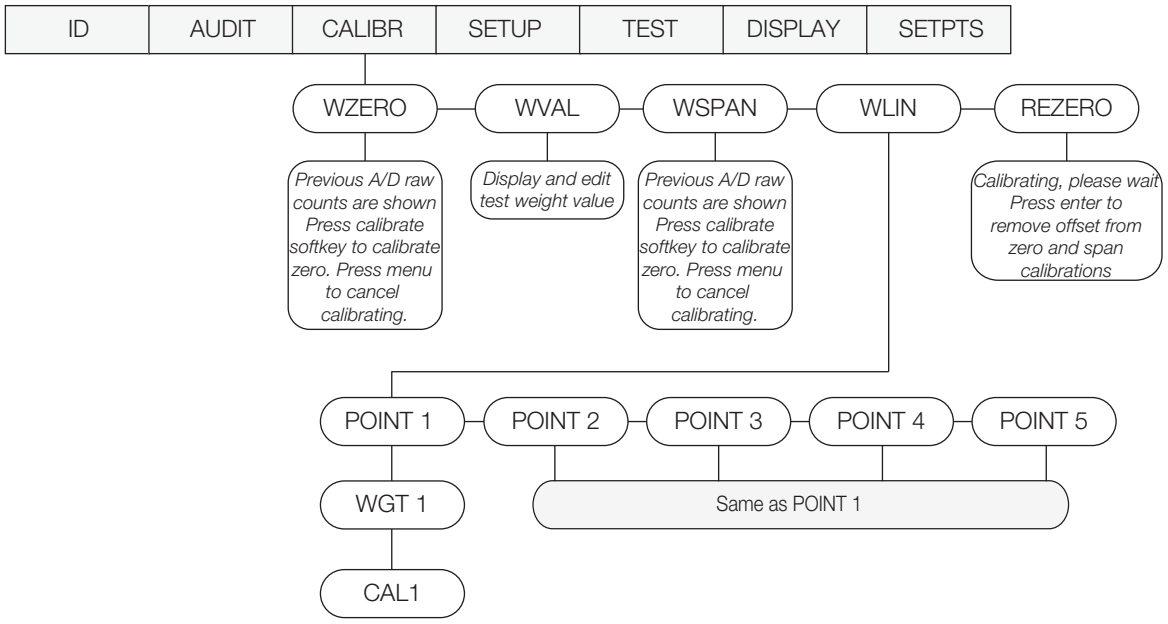


Figure 4-1. Calibration (CALIBR) Menu

4.1 Front Panel Calibration

1. Press the **MENU SETUP** button, and then press ▷ until the display reads ***CALIBR***.
2. Press **TARE (Enter)** or ▽ to go to the scale to be calibrated. Press **TARE (Enter)** or ▽ to go to ***WZERO***. Press **TARE (Enter)** again to display a value and press the ***Calibrate*** softkey to Calibrate ***WZERO.***

Note ***If you do not want to calibrate zero, press Menu to exit.***

3. The indicator displays ***CALIBRATING*** while calibration is in progress. When complete, press **TARE (Enter)** or △ to advanced to the next prompt (***WVAL***).

Note ***To view the new AD count, repeat Step 3, but instead of pressing TARE (Enter) while viewing the value, press MENU SETUP to exit.***

4. With ***WVAL*** displayed, press **TARE (Enter)** or ▽ to display or edit the stored calibration weight value. Press **TARE (Enter)** to store the ***WVAL*** value and advance to ***WSPAN***.
5. With ***WSPAN*** displayed, press **TARE (Enter)** or ▽ to view the A/D count. Place test weights on the scale equal to WVAL. Press the ***Calibrate*** softkey to calibrate WSPAN.

Note *If you do not want to calibrate span, press Menu to exit.*

6. After the **Calibrate** softkey is pressed, the indicator displays ***CALIBRATING*** when complete. Press **TARE (Enter)** or △ and the ***Save Exit*** softkey or proceed to ***WLIN***.

Note *To view the new AD count, navigate back to the WSPAN, and repeat Step 6; however, instead of pressing the Calibrate softkey while viewing the value, press Save/Exit to exit.*

4.2 Five-point Linearization

Five-point linearization (using the WLIN parameter) provides increased scale accuracy by calibrating the indicator at up to five additional points between the zero and span calibrations.

Linearization is optional: if you choose not to perform linearization, skip the WLIN parameter; if linearization values have previously been entered, these values are reset to zero during calibration. WZERO and WSPAN must be calibrated before adding linearization points; WLIN values must be less than the WSPAN value and must not duplicate WZERO or WSPAN.

To perform linearization, follow the procedure below:

With ***WLIN*** displayed, press **Down** to go to the first linearization point (***POINT 1***) and then press **Down** again to show the weight value prompt (***WGT 1***). Then press **Down** to show the weight value. Place test weights on the scale, and use the numeric keypad to enter the actual test weight value. Press **enter** to save the value and move to the calibration (***CAL 1***) prompt. Press **down** to show the current calibration value, and then press the **Calibrate** softkey to calibrate the linearization point. When complete, the AD count for the linear calibration is displayed. Press **enter** again to save the calibration value and go to the next prompt (***POINT 2***).

Repeat for up to five linearization points. To exit the linearization parameters, press the **Up** key to return to WLIN.

4.3 Rezero

The optional rezero function is used to remove a calibration offset when hooks or chains are used to hang the test weights.

Note *The rezero function cannot be used with five-point linear calibration.*

If no other apparatus was used to hang the test weights during calibration, remove the test weights and press **Up** to return to the CALIBR sub-menu.

If hooks or chains were used during calibration, remove these and the test weights from the scale. With all weight removed, go to the REZERO parameter, and press **Down** to show the current zero value. Press the **Calibrate** softkey to adjust the zero and span calibration values. Press **enter** or **Up** to return to the CALIBR sub-menu.

Press **Up** to return to the SCALES menu, or press the **Save and Exit** softkey to exit setup mode.

4.4 EDP Command Calibration

To calibrate the indicator using EDP commands, the indicator EDP port must be connected to a terminal or personal computer. See Section 2.8.1 on page 12 for EDP port pin assignments.

Once the indicator is connected to the sending device, do the following:

1. Place the indicator in config mode (display must read ***SCALE*** — see Figure 3-8 on page 28) and remove all weight from the scale platform. If your test weights require hooks or chains, place the hooks or chains on the scale for zero calibration.
2. Send the SC.WZERO#*n* command to calibrate zero. The indicator displays ***CALIBRATING*** while calibration is in progress.
3. Place test weights on the scale and use the SC.WVAL#*n* command to enter the test weight value in the following format:

   SC.WVAL=*nnnnnn*<CR>
4. Send the SC.WSPAN#*n* command to calibrate span. The indicator displays ***CALIBRATING*** while calibration is in progress.

5. Up to five linearization points can be calibrated between the zero and span calibration values. Use the following commands to set and calibrate a single linearization point:

   SC.WLIN.V1=*nnnnn*<CR>
   SC.WLIN.C1<CR>

   The SC.WLIN.V1#*n* command sets the test weight value (*nnnnn*) for linearization point 1. The SC.WLIN.C1#*n* command calibrates the point. Repeat using the SC.WLIN.V*x* and SC.WLIN.C*x* commands as required for additional linearization points.
6. To remove an offset value, clear all weight from the scale, including hooks or chains used to hang test weights, and send the SC.REZERO#*n* command. The indicator displays ***CALIBRATING*** while the zero and span calibrations are adjusted.
7. Send the SC.KUPARROW#*n* or the SC.KEXIT#*n* EDP command to return to normal mode.

4.5 Revolution® Calibration

To calibrate the indicator using Revolution, the indicator EDP port must be connected to a PC running the Revolution configuration utility.

1. Place the indicator in config mode (display reads ***SCALE***, — see Figure 3-8 on page 28) and remove all weight from the scale platform.
2. From Revolution, select ***File » New***. The *Select Indicator* dialog box appears.
3. Select *Counterpart* and click **OK**.
4. From the *Communications* menu, select ***Connect***.
5. From the left pane, expand the *Scale* selection and click the **Scale** button.

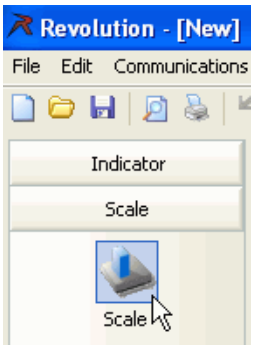


Figure 4-2. Scale Button

6. From the *Tools* menu, select ***Calibration Wizard***.
7. Click ***NEXT*** to begin the Calibration Wizard.
8. Select whether you want to perform a standard calibration or a standard with multi-point linearization and click ***NEXT***.
9. In the text box, enter the test weight value to be used for span calibration.
10. Select the check box if you are using chains or hooks during the calibration, and click ***NEXT***.
11. Remove all weight from the scale and click ***Click to Calibrate Zero*** to begin zero calibration. If your test weights require hooks or chains, place them on the scale for zero calibration.
12. When zero calibration is complete, the Calibration Wizard prompts you to place test weights on the scale. Place the test weights on the scale and click ***Click to Calibrate Span***.
13. If you chose to perform linear calibration, the Calibration Wizard now displays prompts (1–5). Enter the weight value for Linear Point #1, place test weights on scale, and click ***GO***. Repeat for additional linearization points and click ***NEXT***.
14. The new and old calibration settings are displayed. To accept the new values, click **Finish**. To exit and restore the old values, click **Cancel**.

4.6 More About Calibration

The following provides additional information about compensating for environmental factors (Section 4.6.1) and also provides diagnostic information for determining expected zero and span coefficients.

4.6.1 Adjusting Final Calibration

Calibration may be affected by environmental factors including wind, vibration, and angular loading. For example, if the scale is calibrated with 1000 lb, a strain test may determine that at 2000 lb the calibration is 3 lb high. In this case, final calibration can be adjusted by tweaking WVAL to 998.5 lb. This adjustment provides a linear correction of 1.5 lb per 1000 lb.

To adjust the final calibration, return to the ***WVAL*** prompt and press **TARE (Enter)** to show the test weight value. Press △ or ▽ to adjust calibration up or down. Press the **Calibrate** softkey to save the value, and press △ to return to the CALIBR menu.

5.0 Scale Operations

The following contains detailed operator instructions for Counterpart, including instructions on how to enter tare weights, toggle between net and gross weight, enter unit weights, perform inventory accumulation and reduction, and toggle between scales. All operator instructions are conducted with the scale in the operation mode that is the weighing or normal mode.

Counting scale accuracy is determined by:

- Sample size (number of pieces)
- Total sample size as a percentage of full scale capacity
- Piece-to-piece weight variation

As a general rule when determining sample size of fairly uniform pieces, the larger the sample size, the greater the total sample weight, and therefore, the better the counting accuracy. Selecting the smallest capacity scale that can obtain the highest counting resolution should be considered, but should not sacrifice the capacity required for the heaviest container of parts. For this kind of application, a dual-platform scale may be the best selection. There is a direct relationship between piece-to-piece weight variation (non-uniformity) and counting accuracy.

Therefore, elimination of the piece-to-piece weight variations can be accomplished by:

1. Isolating the sample used to calculate the unit weight and using the same sample to re-check the scale.
2. Recalculating the unit weight from lot-to-lot of parts. Parts manufactured on one machine may vary slightly from another machine relative to weight.
3. Tightening the manufacturing tolerances on the parts reduces piece weight variations and increases count accuracy.

The Stand-by Screen

At the stand-by screen the ***WEIGHT, UNIT WEIGHT,*** and ***QUANTITY*** displays show zeros and the annunciator for the platform is illuminated (Scale 1 or 2).

5.1 Weight Unit Switching

The weight units displayed can be changed between primary, secondary and tertiary units during weighing operations by pressing the **UNITS TOGGLE** key.

5.2 Entering Tare Weights

Tare weights can be entered in the scale by one of two methods: one-touch tare or digital tare. Digital tare is used when the tare weight is already known while one-touch tare is used when the tare weight is unknown. If you call up an Item Code already programmed into the *Counterpart* memory and you have a tare weight stored for that Item Code, the tare weight stored with the Item Code will override one entered digitally or by using the **TARE** key.

5.2.1 One-Touch Tare, Tare Unknown

1. If the tare weight value is not known, place the item to be tared on the scale and press **TARE**. The weight display should now show ***0*** and the ***Net*** annunciator should illuminate.
2. Remove the item from the scale. The weight display should show a negative weight value (weight of the tared container, box, or item).
3. To clear the tare weight, press **TARE** with no weight on the scale. The ***scale should be at gross zero***. The ***Net*** annunciator will no longer be illuminated.

5.2.2 Digital Tare, Tare Weight Known

1. If the tare weight value is known, use the numeric keypad to key in the value and then press **TARE**. The ***Net*** annunciator will illuminate.
2. To reset the tare to zero, press **TARE** again with no weight on the scale while the scale is at gross zero and the ***Zero*** annunciator is lit.

5.3 Toggling Between Gross and Net

To toggle between net and gross weight, a tare value must be entered into the scale. See Section 5.2 to enter a tare value.

After a tare value is entered into the scale, items placed on the scale will cause the ***Net*** annunciator to illuminate and allow toggling between net weight and gross weight. For example:

1. Place 0.5 lb weight on the scale and then press **TARE**. The weight display should show 0.000 lb.
2. Place another 0.5 lb weight on the scale. The scale weight display should show 0.500 and the ***Net*** annunciator should be illuminated.
3. Press the **GROSS/NET** key. The weight display should show 1.000 GROSS WEIGHT, and the ***Net*** annunciator will no longer be illuminated.
4. Press the **GROSS/NET** key. The weight display should show 0.500 and the ***Net*** weight annunciator should be illuminated again.

5.4 Entering Unit Weights

Entering unit weights can be done either by sampling, as presented in Section 5.4.1, or by key entry as described in Section 5.4.2.

EXTENT OF INSUFFICIENT SAMPLES controls unit weight sampling. The default setting for the INSFSMPLE is 0.1 percent.

SAMPLE QUANTITY determines the number of pieces the scale assumes are on the platter when you press the SAMPLE key to calculate the unit weight. The default setting is 10 pieces.

XFRUNITWT sets whether the unit weight determined by sampling is automatically transferred from Scale 1 to Scale 2. The default setting is AUTOMATIC.

UNIT WEIGHT BASE controls whether the unit weight is displayed per 1000 pieces or per 1 piece. The default setting for this is 1000 pieces.

Unit Weight per 1000 Pieces vs. Unit Weight per 1 Piece

The scale's internal microprocessor calculates unit weights to several decimal places. However, the scale display generally can only show unit weight to a maximum of 8 characters (or 7 places and a decimal point). If this unit weight is recorded from the scale display and entered by key entry, this can introduce errors in the unit weight and consequently in the counts. This error increases as the unit weight of the parts being counted decreases.

Example: A sample of 10 zener diodes is placed on the scale. The unit weight is computed to be 0.000653642 lbs. However, the scale has a 7 character display for unit weight (or 6 places after the decimal point — 0.000000) so the scale can only display 0.000653 as the unit weight. If this unit weight were recorded and keyboard entered in future counting operations, the resulting error would be:

$$\left(\frac{0.000653642 - 0.000653 \times 100}{0.000653642}\right) = 0.098\%$$

On the other hand, with entry of the unit weight as "weight per 1000 pieces" the decimal place is, in effect, moved three places to the right, allowing 3 more decimal places of accuracy. In this example, the entry would be made as 0.653642 per 1000 pieces, eliminating the error.

As a practical note, entering unit weights per 1000 pieces also lessens the chances of entering the wrong number of zeros when keying in weights with many leading zeros. Incorrect entry of unit weights is a common cause of inaccurate counting.

You might want to use unit weight per 1 piece generally this case:

1. When working with other existing systems or procedures that are already set up to record unit weight per piece such as (inventory systems or labeling requirements).

5.4.1 Unit Weight Operation by Sampling

Unit weight operation by sampling is accomplished by placing a 10 piece sample on the scale and then pressing the SAMPLE key. The scale calculates a unit weight based on the weight of the sample. The following details the procedure with UNIT WEIGHT set at either on or off.

Default settings are placed at 10 pieces. To key in a larger sample, key in the quantity and press SAMPLE.

Unit Weight Update Set to "Off" (Default)

Parts can be sampled (generating a new unit weight) or a unit weight can be scanned, but the new unit weight is not saved into the stored copy of the loaded ID record.

Unit Weight Update Set to "On"

Parts can be sampled (generating a new unit weight) or a unit weight can be keyed or scanned and the new unit weight is saved into the stored copy of the currently loaded ID record. If WeighVault is also enabled, a WeighVault ID update will also occur.

5.4.2 Unit Weight Operation by Key Entry

Unit weight operation by key entry is accomplished by using the numeric keypad to enter the known value of the unit weight and then pressing the UNIT WEIGHT key. For example:

1. With the display in the weighing mode, enter the known unit weight of 200.00 using the keyboard.
2. Press the UNIT WEIGHT key to enter the unit weight.
3. Place a 2 lb weight on the scale. The weight display reads 2.000, the unit weight display reads 200.00, and the quantity display reads 10.

You can also enter a weight as APW (average piece weight) or unit weight per thousand.

Note *To clear the unit value, enter 0 and push the Unit Weight key.*

Piece Weight Enhancement

After performing a sample process, the unit determines the maximum number of pieces that could be accurately used for a recompute. If the number of pieces on the scale is less than the recompute value, the RECOMP annunciator will be shown.

1. Place items to be counted on the scale platter; make sure the ***RECOMP*** annunciator is still on.
2. Press the SAMPLE key while the ***RECOMP*** annunciator is shown. This will start a sample process using the current piece count (instead of the SAMPLEQTY value) as the sample quantity.

Negative Counting (Full Box Counting)

Just as you can count by adding parts to the scale, you can also count by removing parts from the scale. This is called "negative counting" because a negative weight is displayed while counting. However, you do not use the (-) key to do negative counting. The (-) key is only used to delete an entry in accumulation mode that you want to erase. This procedure does not affect the inventory quantity for this item stored in the scale.

Note *To utilize the negative counting feature, set NEGCOUNT to "On" under the Count Menu and the regulatory mode must be set to Industrial.*

There are two ways to do this depending on whether you want to see the total amount remaining in the container or the total amount removed from the container.

Counting Out of a Full Container — See Total Amount Remaining in the Container

To carry out this operation you must know the tare weight ahead of time.

1. Place the full container on the scale. Press the **TARE** key.
2. Remove a 10 piece sample from the container and press the **SAMPLE** key. After the unit weight has been calculated, return the sample to the container.
3. If you want to see how many are still in the bin, you first have to know the tare weight of the bin or container. After removing the parts you want to take out of the bin, enter the tare weight of the bin and press the **TARE** key. The scale will display how many parts were left in the bin. To print a label to put on the bin showing the total quantity in the bin, press the **PRINT** key.

Negative Counting — Total Removed Displayed at the End

With this procedure you can count accurately out of a full container for kitting or shipping without having to know the tare weight of the container.

1. Place a full container on the scale and press **TARE**.
2. Remove a 10 piece sample from the container and press **SAMPLE**. After the unit weight has been calculated, return the sample to the container.
3. Remove the number of pieces you need for kitting or shipping. The amount removed will be displayed. If you need a label for each kit or container, press the **PRINT** key after removing each batch of pieces.

5.5 IDs

IDs are used to save and recall previously set codes, descriptions, unit weight, and tare preferences. The *Counterpart* has the capacity to store up to 150 individual IDs. There are three ways IDs can be entered and set:

1. Normal
2. Through Count Mode
3. Through Revolution

To enter alpha ID characters, double press the numeric keypad to obtain alpha characters.

To store more than 150 IDs, WeighVault is required (see Section 5.6 on page 65).

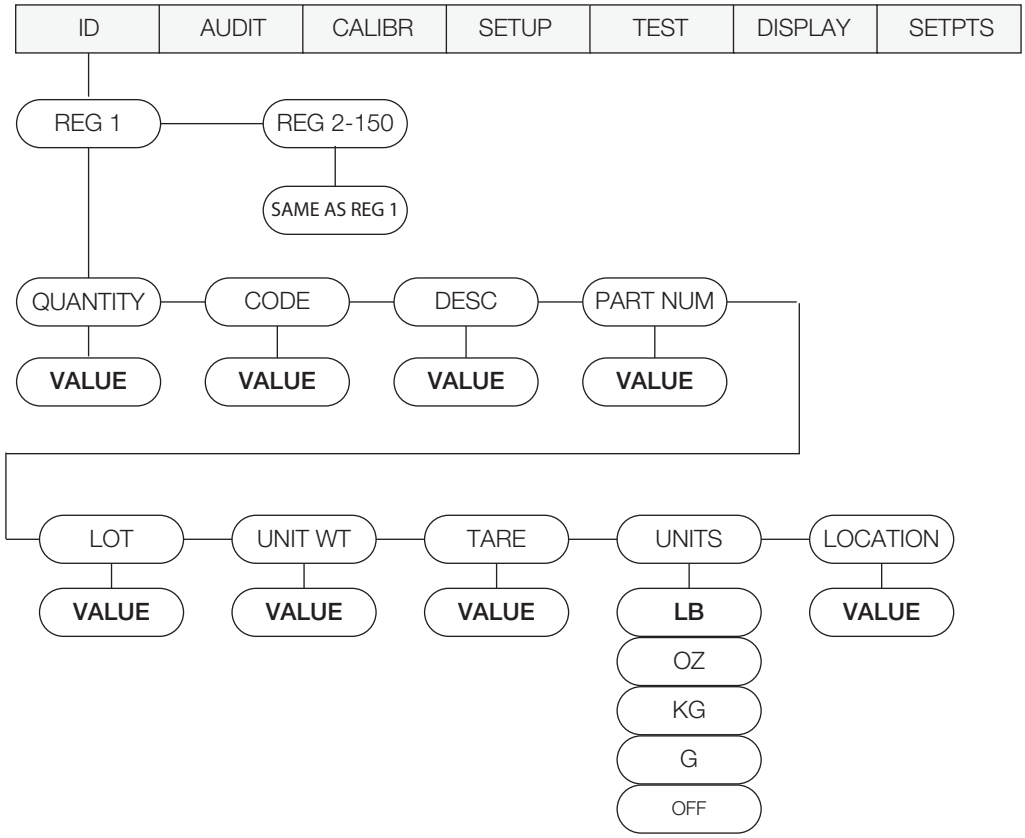


Figure 5-1. ID Menu

5.5.1 Setting an ID Using the Normal Mode

1. Press the **MENU SETUP** key to access this menu.

2. Press ◁ to ID and then press ▽ and you will be at REG1.
3. Navigate to the REG number you want to set (1-150) by using the ▷ and ◁ keys.

All menus have wrap-around functionality. If you are at ID1 and want to access ID150, you can quickly do so by moving backwards through the menu.

4. When you have reached the REG number you want to set, press ▽ to select that register number.
5. Press ▽ and enter the CODE value — either the numeric or alphanumeric is acceptable. Thirty two characters can be entered and only 25 characters maximum for default bar code formats. This code will be used to recall the ID.
6. When the desired value is entered, press **TARE (Enter)**.
7. Enter the information for description, part number, lot number, unit weight, tare with all entries being optional.
8. Press **TARE (Enter)** again to accept the value(s).
9. Press △to advance back up to REG. Press △ again, and the ***DONE*** softkey is displayed.
10. When complete, push the ***DONE*** softkey.

Enter Lot Number — Optional

1. ***LOT*** will be displayed. Press ▽ key to enter the alphanumeric value using the Counterpart keypad.
2. Press the **TARE (Enter)** key to accept.

Enter Unit Weight — Optional

1. ***UNIT WT*** will be displayed. Press ▽ and enter the unit weight value using the Counterpart keypad.
2. Press the **TARE (Enter)** key to accept.

Enter Tare — Optional

1. ***TARE*** will be displayed. Press ▽ and enter the tare value using the Counterpart keypad.
2. Press the **TARE (Enter)** key to accept.

Enter Units — Optional

1. ***UNITS*** will be displayed. To adjust the units, use the ◁ and ▷ keys to adjust the selection or press ▽ to view the current setting.
2. Use the △ key or the **TARE (Enter)** key to store the setting.

Enter Location — Optional

1. ***LOCATION*** is displayed. Use the ▽ key and enter a value. Push the **TARE (Enter)** key to store.

5.5.2 Using a Stored ID

1. Press the **CODE** (***softkey needs to be set up***) key.
2. Counterpart responds with a code #=> with a prompt. Enter the ***ID*** code.
3. Press **TARE (Enter)**.

Press code and then enter a zero to unload an ID code.

5.5.3 Using ID/Codes that are not Stored

1. Enable ***Single ID*** under feature menu.
2. Setup softkeys for code and other information to be printed, including part #, description, and/or quantity.
3. Press **Softkey.**
4. Key in value or information and press **Tare (Enter)**.
5. The unit weight softkey may be set up to clear unit weight.
6. Next ID/code overrides data.

5.5.4 Clearing ID Codes

1. Press the **Menu Setup** key.
2. Toggle through menu items to **ID**.
3. Select ***Reg 1-150*** to clear.
4. Push the **Clear ID** softkey.
5. The display prompts ***Clear ID Values***. Press the **Yes** softkey.
6. Display shows ***ID Cleared***.
7. Push the **Menu** softkey to return to the Use mode.

5.5.5 Adding an ID From Count Mode

1. Press the ***CODE*** softkey.
2. Add in the ID number. The Alpha **ON/OFF** Softkey appears to allow number only entry.
3. If the ID number is not already in the database, *Counterpart* prompts, ***Not Found, Save as New ID***?
4. Select Yes or No. By selecting Yes, *Counterpart* will store that ID code into the first open register. By selecting No, you will go back to the Counting mode screen.
5. Optional – **Sample Quantity** desired and press the **UW Update** softkey
6. Optional – Tare the container and push the **Tare Update** softkey.

5.5.6 Adding an ID Through Revolution

To add an ID using Revolution, you must have Revolution installed on your computer. Visit **www.ricelake.com** to download this free configuration software.

1. Unplug power to Counterpart.
2. Wire cable between computer and Counterpart.
3. Plug in power to Counterpart and press Counterpart's **POWER** key.
4. Open Revolution and go to Base Configuration, >> IDs.
5. To upload IDs from Counterpart, select ***Connect*** from the Toolbar or under ***Communications — Connect***.
6. Select ***Communications*** and then Upload Configuration or Upload Section.
7. Select REG # and add information into the screens as shown in Figure 5-2.

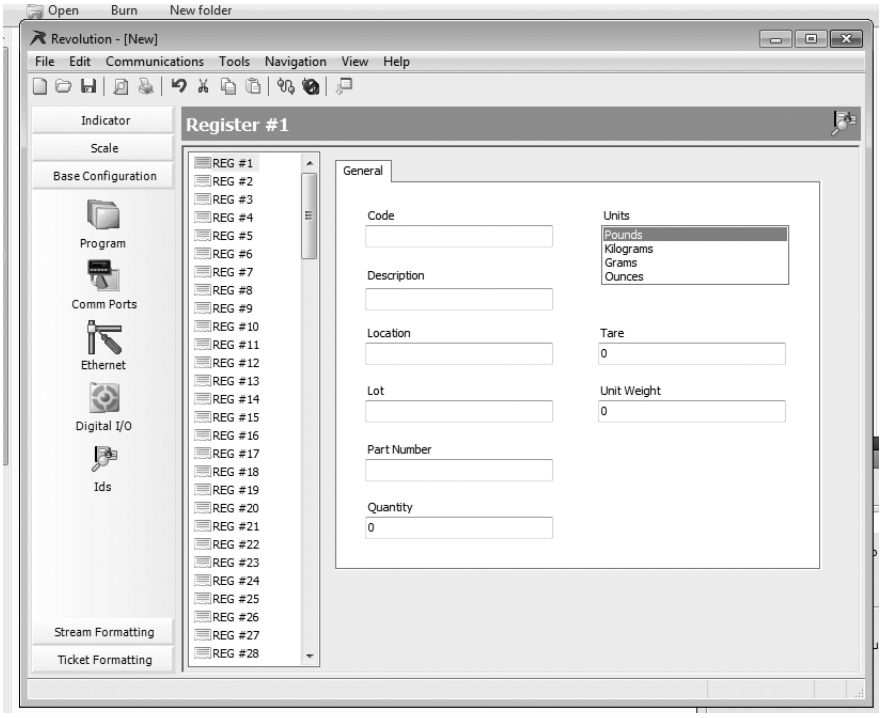


Figure 5-2. Adding IDs Through Revolution

8. To download the ID to Counterpart, connect Revolution, and select ***Communications*** and either Download Configuration or Download Section.
9. All register IDs are now entered and available through Revolution.

Note *By uploading IDs using Revolution and saving them to a file the IDs can be backed up for future use.*

5.6 WeighVault

WeighVault is a PC program that allows *Counterpart* users to add, edit, and access IDs over a network connection. WeighVault surpasses the *Counterpart*'s 150 ID limitation and eliminates front-panel entry of ID parameters. **In** and **Out** softkeys can be used to update the ID quantity with inventory changes. Setting up softkeys is explained in Section 1.7 on page 5. If WeighVault is enabled the inventory changes are also sent to the WeighVault PC.

It also collects data as transactions occur, and provides detailed transaction and productivity reports that can be exported to Excel, Word, or PDF. For WeighVault to function, the following criteria must be met:

- Use onboard Ethernet or wireless option (PN72117 Ethernet TCP/IP Interface Installation and Configuration Manual)
- IP address assigned to the *Counterpart* (Refer to PN72117 Ethernet TCP/IP Interface Installation and Configuration Manual)
- WeighVault enabled in the *Counterpart* menu (ETHERNET menu; see Section 3.7.3 on page 42). Table 5-1 lists parameters that must be entered in order for WeighVault to work.

Parameter	Default
DHCP	Consult with network administrator
IP ADDRESS	Consult with network administrator
NET MASK	Consult with network administrator
PORT	Port 10001
REMOTE IP	IP address of computer running WeighVault — must be static
REMOTE PT	5466
VAULT	Onboard or external if using a wireless option

Table 5-1. WeighVault Default Settings

Note *These default settings apply only if the* **VAULT** *parameter is set to ONBOARD. See Figure 3-22 on page 51.*

5.6.1 Demo Setup of Counterpart and WeighVault

Install WeighVault. There are two setup programs that need to be installed.

On the PC

This setup was completed in Windows 7, however the basic information about setup is applicable to other computer operating systems.

Use the following steps to set up WeighVault on the computer side.

1. Plug in crossover cable. The computer should be able to identify this cable.
2. Go to Properties, Internet Protocol, Version 4 - TCP/IPv4.
3. Choose Assign IP address.
4. Use the following IP address for this demo: 192.168.0.2 (if setting your system, check with your network administrator).
5. Click on subnet mask field. This will fill screen in automatically.
6. Click OK and close each window.

On the Counterpart

Use the following steps to set up WeighVault on the Counterpart side.

1. Enter menu settings and go to Ethernet.
2. DHCP should be set to Off.
3. Set the IP address 192.168.0.1 (this should be in the same range as the computer side, but the last digit is different. (If setting your system, check with your network administrator.)
4. Set the subnet mask — 255.255.255.0.
5. Set the default gateway, DNS Pri, DNS Sec — no changes.
6. Set the local port — 10001.
7. Set the remote IP address — 192.168.0.02 (this is set same as computer above).
8. Set the remote port — 5466.
9. Set the Vault — set onboard.
10. Set up softkey — Code.
11. IN/OUT softkey — for in/out inventory setup

5.6.2 Using WeighVault

Once the above criteria have been met, IDs can be entered into WeighVault and saved on the PC's hard drive. The *Edit Product* dialog box in Figure 5-3 shows ID parameters that can be saved in WeighVault.

For testing purposes, enter a few part numbers and click **Save Changes to Database.**

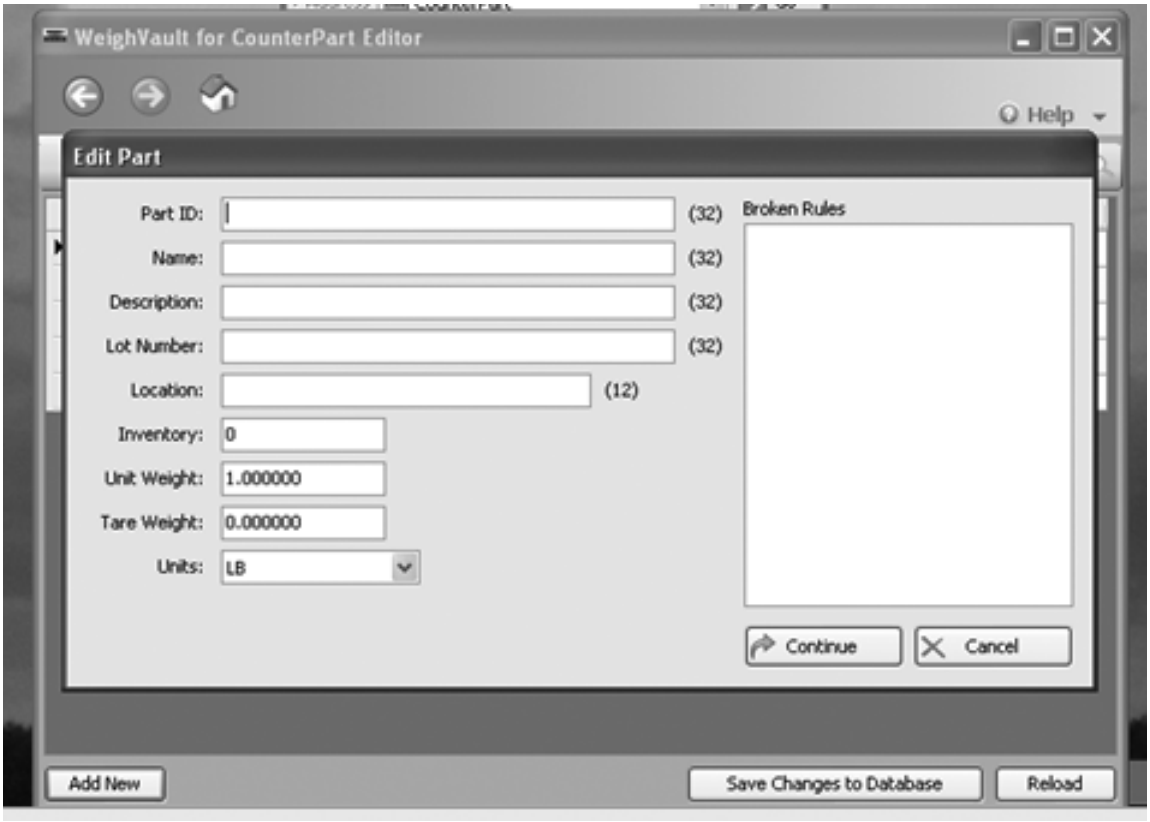


Figure 5-3. WeighVault Edit Product Dialog Box

To access a saved ID from WeighVault over the network connection,

1. Using the *Counterpart* front panel, press the **CODE** key.
2. Enter an **ID CODE** value.
3. Press the **TARE (Enter)** key. The ID CODE is loaded and ready to use.

Note ***If the demo feature is complete and not being used permanently with WeighVault, go to your network settings and turn off the Assign IP Address feature.***

5.7 Totalization Counts

Counterpart has a totalization function that allows you to totalize the quantity of several weighings together. This is especially helpful if putting together parts kits. The ID code is functional with totalization, count or weight.

For full operation of the totalization feature, configure the unit with the following softkeys:

TOTAL+
TOTAL-
Clear Total

To find the total accumulated quantity of similar containers filled with parts, use the totalization procedure detailed below. Six containers are used in this example; all containers are of the same empty weight.

1. Conduct a sampling process to determine the unit weight of the pieces, or key in a known unit weight or recall an ID.
2. Enter a known tare weight or place an empty container on the scale to perform tare function. If an ID was recalled in step 1, its tare value is already loaded.
3. Place container 1 (full of parts) on the scale. The number of pieces in the container is shown in the ***PCS*** area of the display.
4. Press the ***Total +*** softkey to store the number of pieces in container 1. The memory (***M***) icon is shown. The net weight of the items in the containers is stored and the totalization count is incremented. The piece count value is displayed. The total count is shown in place of the unit weight display, and it is labeled as Total Weight ***ttl***.
5. Remove container 1 and place container 2 (full of parts) on the scale.
6. Press the ***Total +*** softkey. The accumulated total is now equal to container 1 plus container 2. The displayed total is also updated.
7. Continue with the remainder of the containers in the same totalization method. The total number of parts stored in all six containers (and the weight of the parts in those containers) is now stored and shown on the display.

Note

- An ID may be loaded while part totalization is being performed, the ID Quantity value is not affected by the totalizations operations.
- If a totalization has been started and the **Code** softkey is pressed — the unit will prompt ***Exit Totalization Mode?*** with **Yes** and **No** softkeys. Pressing **Yes** clears the total, exits from totalization mode and brings up the normal prompt for entering an ID code. If **No** is pressed, the unit does not prompt for an ID Code and totalization can continue.
- The user cannot switch to another scale during totalization. If the **Unit Toggle** key is pressed during totalization, the message ***not allowed — totalizing*** will be displayed and the switch will not occur.
- The user cannot switch units during totalization. If the **Unit Toggle** key is pressed during totalization, the message ***not allowed - totalizing*** will be displayed and the switch will not occur.
- During totalization an icon is displayed between the battery icon and the main display area label. The icon is an uppercase M for memory.
- For each totalization done (***Total+*** or ***Total-***) a count will be incremented. This value can be printed. When the total value is cleared and totalization mode is exited, the count will be cleared as well.
- While in totalization mode, pressing the **Print** key will print the total format — **TOTALFMT**.
- When attempting a totalization, a motion check can be performed based upon the setting of the TOTAL parameter in the Feature/Count menu. If Total is ON and if there is motion, then one more attempt will be made after two seconds. The default setting is OFF.
- To clear the total value, press the **Clear Total** softkey, and it will clear the total value.

5.8 Parts Reduction Counts

Parts reduction can also be done by using the minus key while the scale is in the weighing mode and the memory annunciator is on.

1. Conduct a sampling process to determine the unit weight of the pieces, or key in a known weight or recall an ID.
2. Enter known tare weight, or place an empty container on the scale to perform tare function. If ID was recalled in step one, its tare value is already loaded.
3. Place the container (full of parts) on the scale. The number of pieces in the container is shown in the ***PCS*** area of the display.
4. Press the ***Total +*** softkey to store the number of pieces in the container. The memory (***M***) icon is shown. The net weight of the items in the container is stored and the totalization count is incremented. The total piece count value is shown in place of the piece weight value and will be labeled ***ttl.*** The total net weight is shown in place of the normal ID Code: line - it is labeled as Total Weight.
5. Remove the number of parts required from the container and press the ***Total -*** softkey. The total piece count value is now equal to the number of pieces removed. The number of pieces remaining in the container is shown in the ***PCS*** area of the display. The total weight is now equal to the weight of the removed pieces.
6. Repeat step 5 as needed.

Note ***Once part reduction has been started, Pressing Total + will give you an error message.***

5.9 Accumulate Feature For Weight

The accumulate feature allows a weight value to be accumulated. The following steps to use this feature.

1. Enable the Accumulate in the Scale Menu. Press the **On** key, and the display will say ***Accumulator Enabled.***
2. Set up the **Display Accum — (DSP ACC)** and **Swap Display (SWAPDSP)** softkey. See Section 1.7 on page 5 of the manual for help on setting up softkeys.
3. The weight must be active on the display.
4. Each time there is a print, the weight value is added to the accum register and keeps track of how many accums were completed. Product must be removed from the platform and the display returned to zero each time this is done.

5.9.1 Printing the Accumulated Total

Press the **Print** key to print the accumulated total when the Accum Value is displayed.

5.9.2 Clearing the Accumulated Total

1. Push the **CLR** key when the display ***Accum*** has been pressed.
2. ***PRESS CLEAR TO VERIFY*** is displayed. Press **CLR** again to clear the accum value.

5.9.3 IN/OUT Softkeys

Use the following steps to set up IN and OUT softkeys.

1. Push IN to add the displayed count value to quantity on hand of a stored ID code.
2. Push OUT to removed the displayed count value to quantity on hand of a stored ID code.

5.10 Batch Operations

Softkeys can be configured to allow the operator control of batch operations from the Counterpart front panel (see Figure 5-4). Softkeys can be configured using serial commands, or the FEATURE menu.

Figure 5-4. Counterpart Batch Operation Screenshot

Parameter	Description
Setponit	Display or change assigned setpoints
Batch Start	Starts the batch process
Batch Reset	Steps and resets an active batch to the beginning of the process.
Batch Stop	Stops an active batch and turns off all associated digital outputs.

Table 5-2. Batching Softkeys

Batching Switch

The batching switch option, PN 19369, comes as a complete unit in an FRP enclosure, with legend plate, locking stop switch (mushroom button), and a run/start/abort 3-way switch.

Both switches are wired into the Counterpart's digital I/O terminal strip as shown in Figure 5-6 on page 70. Each switch uses a separate digital input.

Once cables and switch have been connected to Counterpart, use the menu button to place Counterpart in setup mode. Use the DIG I/O menu to configure the digital input and output functions.

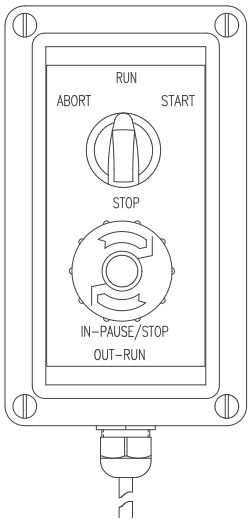


Figure 5-5. Batching Switch

When configuration is complete, exit setup mode. Initialize the batch by turning the 3-way switch to Abort, then unlock the STOP button (the STOP button must be in the OUT position to allow the batch process to run). The batching switch is now ready to use.

WARNING ***If no digital input is assigned to BATRUN, batching proceeds as if BATRUN were always on; the batch will start the 3-way switch is turned to RUN, but the STOP mushroom button will not function***

.

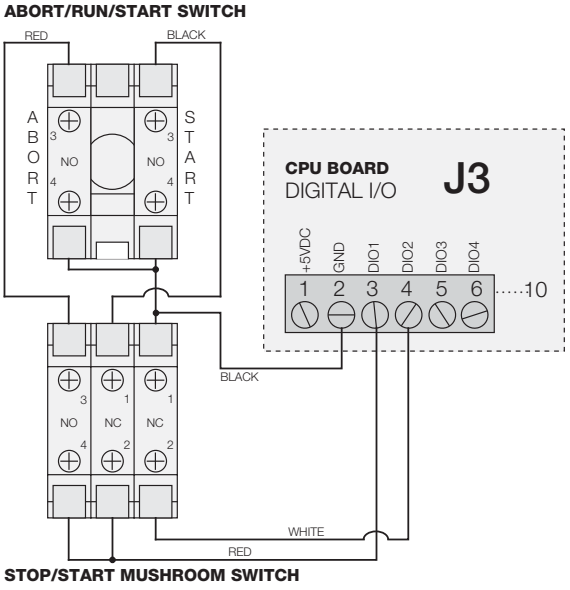


Figure 5-6. Batching Switch Wiring Diagram Example

To begin a batch process, turn the 3-way switch to START momentarily. If the STOP button is pushed during the batch process, the process halts and the button locks in the IN position.

The START switch is ignored while the STOP button is locked in the IN position. The STOP button must be turned counterclockwise to unlock it, then released into the OUT position to enable the 3-way switch.

To restart an interrupted batch from the step where it left off, do the following:

1. Unlock the STOP button (out position).
2. Turn the 3-way switch to START.

To restart an interrupted batch from the first batch step, do the following:

1. Turn 3-way switch to ABORT.
2. Unlock STOP button (out position).
3. Turn the 3-way switch to START.

Note ***Use this procedure (or the BATRESET serial command) to initialize the new batch routine following any change to the setpoint configuration.***

5.11 Connecting a Barcode Scanner

The *Counterpart* will accept a barcode scanner connected to the unit. In order to use a scanner, you must set the specifications of the *Counterpart* scale to recognize the scanner to the appropriate port and, in some cases, do the setup on the scanner required by the scanner manufacturer.

The scanner allows non-contact, instantaneous, and accurate input of unit weight, tare weight, and ID code.

QD2100 Barcode Scanner

If you are using the Quickscan QD2100 barcode scanner sold by Rice Lake Weighing Systems, you can set up the scanner by connecting the scanner (PN121495) to the RS-232 port on the *Counterpart* CPU board. Plug connector with three wires into serial port 2 (J4) and plug with one wire into DIGIO (J3). Connections between the barcode scanner and Counterpart should be wired as shown in Table 5-3.

Pin out	Wire Color
RX	Green
TX	Red
Ground	Black
DIGIO	
5+	

Table 5-3. Barcode Wiring Connections

The default baud rate is set for 9600 for both *Counterpart* and the scanner.

To set up barcode scanner parameters:

1. Navigate through the menu Setup >> Config >> Serial.
2. Set up the selected Port, J5 (Port 1) or J4 (Port 2) for the scanner.
3. Follow through and set up the various parameters such as 9600 baud, 8 bits, 1 stop bit, none parity.
4. Headers are set to ***ON*** under scanner sub-menu when needing to have headers for IDs, tare and unit weights.
5. If the header is set to ***OFF***, the *Counterpart* assumes that all scanned items are ID codes and part numbers.

Note ***ID codes are not functional when scanning ID codes.***

Header Number	Description	Action
1	Unit Weight	The scanned unit weight value updates the working ID and is also applied.
3	ID Code	The scanned ID code is loaded.
4	Tare	The scanned tare value updates the working ID and is also applied to the scale.
M	Part Number	The scanned part number updates the working ID and a Yes/No prompt is shown asking if the stored ID should also be updated.
Note: Part Number 121495 is supplied with 2 connectors. Plug connector with 3 wires into J4 and set plug. Plug connector with 1 wire into J3.		

Table 5-4. Header Codes for Bar Codes

5.12 USB Keyboard

The USB keyboard requires USB option and setup of parameter.

Keyboard entry of ID/Code information

Function keys 1-5 operate as function keys of counterpart. Function key 11 operates as sample key.

6.0 Serial Commands

The *Counterpart* can be controlled by a PC or remote keyboard connected to an indicator serial port. Control is provided by a set of serial commands that can simulate front panel key press functions, display and change setup parameters, and perform reporting functions. This provides the ability to print configuration data or to save to your hard drive.

6.1 The Serial Command Set

The serial command set can be divided into five groups: key press commands, reporting commands, the RESETCONFIGURATION special function command, parameter setting commands, and transmit weight data commands. When a serial command is processed, the *Counterpart* responds with the message ***OK***. The ***OK*** response verifies that the command was received and has been executed. If the command is unrecognized or cannot be executed, the *Counterpart* responds with ***??***.

The following sections list the commands and command syntax used for each of these groups.

6.1.1 Key Press Commands

Key press serial commands simulate pressing the keys on the front panel of the indicator. These commands can be used in both setup and normal (weighing) mode. Several of the commands serve as “pseudo” keys, providing functions that are not represented by a key on the front panel.

For example, to enter a 15 lb tare weight:

1. Type K1 and press **ENTER** (or **RETURN**).
2. Type K5 and press **ENTER**.
3. Type KTARE and press **ENTER**.

Command	Function
KMENU	Press the MENU key.
KZERO	In weighing mode, press the ZERO key.
KUNITS	In weighing mode, press the UNITS key.
KPRINT	In weighing mode, press the PRINT key.
KTARE	Press the TARE key.
KID	In weighing mode, press the ID key. In menu mode, move left in the menu. In data entry mode, move to previous digit.
KGROSSNET	In weighing mode, press the GROSS/NET key (pseudo key).
KGROSS	Go to gross mode (pseudo key).
KNET	Go to net mode (pseudo key).
KDISPACCUM	Display ACCUM (pseudo key).
KDISPTARE	Display tare (pseudo key).
KCLR	Press the CLEAR key.
KCLRCN	Reset consecutive number (pseudo key).
KCLRTAR	Clear tare from system (pseudo key).
KLEFT	In menu mode, move left in the menu.
KRIGHT	In menu mode, move right in the menu.
KUP	In weighing mode, press the UNDER key. In menu mode, move down in the menu. In data entry mode, decrement the current digit.
KDOWN	In weighing mode, press the UNDER key. In menu mode, move down in the menu. In data entry mode, decrement the current digit.
KSAVE	In menu mode, saves the current configuration.
KEXIT	In menu mode, saves the current configuration then exits to normal mode.
K0–K9	Press number 0 (zero) through 9.
KDOT	Press the decimal point (.)

Table 6-1. Serial Key Press Commands

Command	Function
KENTER	Press the ENTER key.
KLOCK	Lock specified front panel key. For example, to lock the ZERO key, enter KLOCK = KZERO.
KUNLOCK	Unlock specified front panel key. For example, to unlock the PRINT key, enter KUNLOCK = KPRINT.
KDATE	Display date (pseudo key).
KTIME	Display time (pseudo key).
KESCAPE	Exits the selected parameter. Returns to weigh mode if a parameter is not selected (functions identical to the MENU key in menu mode).
KSOFT*x*	Press softkey number *x*

Table 6-1. Serial Key Press Commands

6.1.2 ID Commands

Up to 150 codes can be entered under ID commands.

Command	Function
ID.CODE#*n*	ID code
ID.DESC#*n*	Item description
ID.LOCATION#*n*	Item stock location
ID.LOT#*n*	Lot number
ID.PARTNUMBER#*n*	Part number
ID.QUANTITY#*n*	Inventory quantity
ID.TARE#*n*	Tare weight value
ID.UNITS#*n*	Units for tare and unit weight values
ID.UNITWEIGHT#*n*	Unit weight value
ID.CLRALL	Clear all IDs from memory Note: The ID.CLRALL command only works in setup mode
ID.CLEAR.INDEX#*n*	Clear ID at index n from memory
ID.CLEAR.CODE#*n*	Clear ID with code of n from memory

Table 6-2. ID Commands

6.1.3 Reporting Commands

Reporting commands send specific information to the serial port. The commands listed in Table 6-3 can be used in all modes.

Command	Function
DUMPALL	List all parameter values, ID information and setpoint data
DUMPCONFIG	List all parameter values excluding ID information and setpoint data
DUMPAUDIT	List audit trail information
DUMPBUFFER	Lists Weighvault buffer information
DUMPIDS	List all ID information
DUMPID.INDEX	List a specific ID by index. See Section 6.1.7 on page 78 for more information.
DUMPIDCODE	List a specific ID by code. See Section 6.1.7 on page 78 for more information.
VERSION	Write *Counterpart* software version
P	Write current displayed weight with units identifier. See Section 9.2.1 on page 90.
XE	Returns a 10-digit code representing any error conditions currently shown on the front panel.
ADCS	Return number of A/Ds installed

Table 6-3. Reporting Commands

Note ***Transmit all configuration settings with the DUMPALL command.***

6.1.4 Clear and Reset Commands

The following commands can be used to clear and reset the *Counterpart*:

RS: Reset system. Resets the indicator without resetting the configuration.

RESETCONFIGURATION: Restores all configuration parameters to their default values (menu mode only). The RESETCONFIGURATION function can also be initiated by pressing navigating to the **DEFALT** parameter under the VERS menu and selecting YES. Then press **ENTER** to reset the indicator.

Note ***All load cell calibration settings are lost when the RESETCONFIGURATION command is run.***

CLEARBUFFER: Clears the Weighvault data buffer.

6.1.5 Parameter Setting Commands

Parameter setting commands allow you to display or change the current value for a particular configuration parameter.

Current configuration parameter settings can be displayed in all modes using the following syntax: ***command***<ENTER>

Most parameter values can be changed in menu mode only.

Use the following command syntax when changing parameter values: *command=value*<ENTER>, where *value* is either a number or a parameter value. Use no spaces before or after the equal (=) sign. If you type an incorrect command, the display reads ***??***.

For example, to set the motion band parameter to 5 divisions, type the following:

SC.MOTBAND=5<ENTER>

For parameters with selectable values, enter the command and equal sign followed by a question mark: *command*=?<ENTER> to see a list of those values. The indicator must be in menu mode to use this function.

Note ***Some parameters are valid only if other parameters or parameter values are specified. Restrictions for front-panel configuration also apply to serial command configuration.***

Command	Description	Values
SC.GRADS#*n*	Graduations	*1–100000*
SC.ZTRKBND#*n*	Zero track band	0, *0–100*
SC.ZRANGE#*n*	Zero range	1.900000, *0–100*
SC.MOTBAND#*n*	Motion band	1, *0–100*
SC.SSTIME#*n*	Standstill time	*1–65535*
SC.OVRLOAD#*n*	Overload	FS+2%, FS+1D, FS+9D, FS
SC.DIGFLTR1#*n* SC.DIGFLTR2#*n* SC.DIGFLTR3#*n*	Digital filtering	1, 2, 4, 8, 16, 32, 64, 128, 256
SC.DFSENS#*n*	Digital filter cutout sensitivity	2OUT, 4OUT, 8OUT, 16OUT, 32OUT, 64OUT, 128OUT
SC.DFTHRH#*n*	Digital filter cutout threshold	NONE, 2D, 5D, 10D, 20D, 50D, 100D, 200D, 250D
SC.THRESH#*n*	Zero threshold	0–9999999
SC.SMPRAT#*n*	Sample rate	30HZ, 60HZ, 120HZ, 240HZ, 480HZ, 960HZ
SC.PWRUPMD#*n*	Power up mode	GO, DELAY
SC.TAREFN#*n*	Tare function	BOTH, NOTARE, PBTARE, KEYED
SC.PRI.DECPNT#*n*	Primary units decimal position	8.888888, 88.88888, 888.8888, 8888.888, 88888.88, 888888.8, 8888888, 8888880, 8888800

Table 6-4. Scales Serial Commands

Command	Description	Values
SC.PRI.DSPDIV#*n*	Primary units display divisions	1D, 2D, 5D
SC.PRI.UNITS#*n*	Primary units	lb, kg, g, oz, OFF
SC.ACCUM#*n*	Accumulator enable	ON, OFF
SC.WZERO#*n*	Zero calibration	
SC.WVAL#*n*	Test weight value	*test_weight_value*
SC.WSPAN#*n*	Span calibration	
SC.WLIN.F1– SC.WLIN.F5#*n*	Actual raw count value for linearization points 1–5	*0–16777215*
SC.WLIN.V1 SC.WLIN.V5#*n*	Test weight value for linearization points 1–5	*0.000001–9999999*
SC.WLIN.C1– SC.WLIN.C5#*n*	Calibrate linearization points 1–5	
SC.LC.CD#*n*	Deadload coefficient	
SC.LC.CW#*n*	Span coefficient	
SC.LC.CZ#*n*	Temporary zero	
SC.REZERO#*n*	Rezero	
SC.SEC#*n*	Secondary units	lb, kg, g, oz, OFF
SC.TER#*n*	Tertiary units	lb, kg, g, oz, OFF
SC.N#*n*	Report scale number being verified in Weigh Mode	

Table 6-4. Scales Serial Commands

Command	Description	Values
EDP.BAUD#*p*	Port baud rate	1200, 2400, 4800, 9600, 19200, 28800, 38400, 57600, 115200
EDP.BITS#*p*	Port data bits/parity	8NONE, 7EVEN, 7ODD
EDP.STOPBITS#*p*	Port stop bits	1, 2
EDP.PRNMSG#*p*	Print message	ON, OFF
EDP.ECHO#*p*	Port echo	ON, OFF
EDP.EOLDLY#*p*	Port end-of-line delay	*0–255* (0.1-second intervals)
EDP.HEADERS#*p*	Port header	ON, OFF
EDP.INPUT#*p*	Port input	PORT 1 - CMD, SCANNER, SCALE, IND SC PORT 2 - CMD, SCANNER PORT 3 - CMD, SCANNER, KEYBOARD
EDP.PORT	Port reporting command. It responds to the port you are connected to.	
EDP.RESPONSE#*p*	Port response	ON, OFF
EDP.SOURCE#*p*	Port source	1, 2, 3
EDP.STREAM#*p*	Port stream	OFF, LFT, INDUST
EDP.TERMIN#*p*	Port termination	CR/LF, CR

Table 6-5. Serial Port Serial Commands

Command	Description	Values
STR.POS#*p*	Custom stream identifiers	None, Space, +
STR.NEG#*p*		None, Space, -
STR.PRI#*p*		8 alphanumeric characters
STR.SEC#*p*		
STR.TER#*p*		
STR.GROSS#*p*		
STR.NET#*p*		
STR.TARE#*p*		
STR.MOTION#*p*		2 alphanumeric characters
STR.RANGE#*p*		
STR.OK#*p*		
STR.INVALID#*p*		
STR.ZERO#*p*		
OPTCARD	Option cards	NONE, FIBER, ETHERNET, WI-PORT, RESERVED, USB, RS232-422, KEYBOARD

Table 6-5. Serial Port Serial Commands

Command	Description	Values
CFGPWD	Configuration password	0, 1–9999999
CONSNUM	Consecutive numbering	0–9999999
CONSTUP	Consecutive number start-up value	0–9999999
DATEFMT	Date format	MMDDYYYY, DDMMYYYY, YYYYMMDD, YYYYDDMM
DATESEP	Date separator	SLASH, DASH, SEMI
DECFMT	Decimal format	DOT, COMMA
DSPBRIGHT	Sets display intensity	0 (dimmest), through 100 (brightest as a percentage)
KYBDLK	Keyboard lock (disable keypad)	OFF, ON
REG.AGENCY	Regulatory compliance	NONE, OIML, NTEP, CANADA, INDUST
REGULAT=NTEP	Regulatory compliance	NONE, OIML, NTEP, CANADA, INDUST
REG.CTARE	Allow clear keyed tare	NO, YES
REG.WORD	Weighing mode	Gross, Brutto
REG.KTARE	Always allow keyed tare	NO, YES
REG.MTARE	Multiple tare action	REPLACE, REMOVE, NOTHING
REG.NTARE	Allow negative tare	NO, YES
REG.ZTARE	Remove tare on ZERO	NO, YES
REG.BASE	Zero base for overload calculation	CALIB, SCALE
REG.PRTMOT	Allow print while in motion	NO, YES
REG.PRINTPT	Add PT to keyed tare print	NO, YES
REG.SNPSHOT	Display or Scale weight source	DISPLAY, SCALE
TIMEFMT	Time format	12HOUR, 24HOUR
TIMESEP	Time separator	COLON, COMMA
SK#1 - SK#12	Softkey Assignment	BLANK, TIMEDATE, CLRTAR, DSPTAR, DSPACC, SCLSEL, CODE, LOT, PRINTLOT, SWAPDSP, IN, OUT, CLRCN, TOTAL+, TOTAL-, CLRTTL, UWUPDT, TAREUPDT, SETPT, BATSTRT, BATSTOP, BATPAUSE, BATRST

Table 6-6. Feature Serial Commands

Command	Description	Values
GFMT.FMT	Gross print format string	See Section 7.0 on page 79 for information about demand print format strings.
NFMT.FMT	Net print format string	
ACC.FMT	Accumulator print format string	
CFMT.FMT	Count print format string	
TOTAL.FMT	Total print format string	
SPFMT.FMT	Setpoint print format string	
HDRFMT1	Header 1 print format string	
PALFMT.FMT	Pallet print format string	
HDRFMT2	Header 2 print format string	

Table 6-7. PFORMT Serial Commands

Command	Description	Values
DIO#*b*	Digital I/O function	OFF, ZERO, NT/GRS, TARE, UNITS, PRINT, CLEAR, CLRCN, GROSS, DSPACC, SAMPLE, SFTKEY 1, SFTKEY 2, SFTKEY 3, SFTKEY 4, OUTPUT
Digital inputs and outputs are specified by bit number		

Table 6-8. DIG I/O Serial Commands

Command	Description	Values
GFMT.PORT	Set the transmit port for each of these formats	PORT 1 PORT 2 PORT 3
NFMT.PORT		
ACC.PORT		
CFMT.PORT		
TOTAL.PORT		
PALFMT.PORT		
SPFMT.PORT		

Table 6-9. Print Format Port Serial Commands

Command	Description	Values
KEYLCK. NUMBER	Keys can be locked or unlocked. Default for all: Unlock	LOCK UNLOCK
KEYLCK.PRINT		
KEYLCK.TARE		
KEYLCK.ZERO		
KEYLCK.SAMPLE		
KEYLCK.GROSSNET		
KEYLCK.UNITWT		

Table 6-10. Keylock Serial Commands

Command	Description	Values
ETH.DEFAULTGATEWAY	Sets IP address	0.0.0.0
ETH.DHCP	DHCP	ON, OFF
ETH.DNSPRIMARY	DNS Primary	0.0.0.0
ETH.DNSSECONDARY	DNS Secondary	0.0.0.0
ETH.IPADDRESS	IP Address	192.168.0.1
ETH.LOCALHOSTNAME	Local Host Name	COUNTERPART

Table 6-11. Ethernet Serial Commands

Command	Description	Values
ETH.MACADDRESS	Mac Address	00-00-00-00-00-00
ETH.NETMASK	Netmask	0.0.0.0
ETH.PORT	Port	10001
ETH.REMOTESERVERIP	Remote server IP	0.0.0.0
ETH.REMOTESERVERPORT	Remote server port	5466
ETH.WEIGHVAULT	WeighVault	OFF, ONBOARD, EXTERNAL
ETH.ECHO	Echo EDP commands	ON, OFF

Table 6-11. Ethernet Serial Commands

6.1.6 Normal Mode Commands

The normal mode print commands transmit data to the serial port on demand in either setup or normal mode.

Command	Description	Values
CONSNUM#*n*	Set consecutive number	*nnnnnn*
UID	Set unit ID	*UID=nnnnnnn*
SX#*n*	Start serial port streaming	OK *or* ?? An EX command sent while in menu mode does not take effect until the indicator is returned to normal mode. The EDP.Stream must be set to LFT or INDUST for this command to work.
EX#*n*	Stop serial port streaming	
XG#*n*	Transmit gross weight in displayed units	nnnnnn UU where nnnnnn is the weight value, UU is the units. **NOTE:** You can also send XGP, XGS, XGT, XTP, etc. to specify primary, secondary or tertiary (P.S.T.).
XN#*n*	Transmit net weight in displayed units	
XT#*n*	Transmit tare weight in displayed units	
XA#*n*	Transmit accumulator value	
RS	Reset system	Soft reset. Used to reset the indicator without resetting the configuration to the factory defaults.
SD	Set date	*SD=MMDDYY, DDMMYY, YYMMDD,* or *YYDDMM.* Enter six-digit date using the year-month-day order specified for the DATEFMT parameter, using only the last two digits of the year.
ST	Set time	*ST=hhmm* (enter using 24-hour format)
KSOFT1-4	Command to perform function assigned to softkey.	n/a
PIECES#*n*	Transmits data from the scale	n/a

Table 6-12. Normal Mode Serial Commands

6.1.7 Unique Commands

Command	Description
DUMPID.INDEX=*n*	To dump an ID by register
DUMPID.CODE=*n*	To dump an ID by code
KDISPMODE	Set or request the current display mode. KDISP = COUNT. Will switch to that mode. This only temporarily switches display. Default is set by dispmode parameter. Other choices include: COUNT WEIGHT UNIT WEIGHT

Table 6-13. Unique Commands

7.0 Print Formatting

The Counterpart provides nine print formats, **GFMT, NFMT, TOTALFMT, PALFMT, CFMT, ACCFMT, SPFMT, HDRFMT1**, and **HDRFMT2**. These determine the format of the printed output when the **PRINT** key is pressed or when a **KPRINT** EDP command is received. The **HDRFMT**s must be called from another format. The SPFMT (setpoint print format) is printed from a setpoint routine.

Each print format can be customized to include up to 500 characters of information, two header formats are limited to 100 characters each), such as company names and addresses, on printed tickets. You can use the indicator front panel (**PFORMT** menu), EDP commands, or the *Revolution*® configuration utility to customize the print formats.

Print formats are limited to 500 characters. The two header formats are limited to 100 characters each.

7.1 Print Formatting Commands

Table 7-1 on page 80 lists commands you can use to format the gross, net and count print formats. Commands included in the format strings must be enclosed between < and > delimiters. Any characters outside of the delimiters are printed as text on the ticket.

Command	Description	Supported Ticket Formats
<G>	Gross weight, current scale	GFMT, NFMT, TOTALFMT, PALFMT, CFMT, ACCFMT HDRFMT1, HDRFMT2
<G#*n*>	Gross weight, scale *n*	
<N>	Net weight current scale	
<N#*n*>	Net weight, scale *n*	
<T>	Tare weight in displayed units. Add four before bracket to print header	
<T#*n*>	Tare weight, scale *n*	
<A>	Accumulated weight, current scale	
<A#*n*>	Accumulated weight, scale *n*	
<AC>	Number of accumulations, current scale (5-digit counter)	
<AC#*n*>	Number of accumulations, scale *n*	
<AD>	Date of last accumulation, current scale	
<AD#*n*>	Date of last accumulation, scale *n*	
<AT>	Time of last accumulation, current scale	
<AT#*n*>	Time of last accumulation, scale *n*	
<UID>	Unit ID number	
<CN>	Consecutive number	
<C>	Piece count, current scale	
<C#n>	Piece count, scale n	
<NL*nn*>	New line (*nn* = number of termination (<CR/LF> or <CR>) characters)*	
<SP*nn*>	Space (*nn* = number of spaces)*	
<SU> or <WA>	Surpress unis. Toggle weight data format (formatted/unformatted)**	
<TI>	Time	
<*nnn*>	ASCII character (nnn=decimal value of ASCII character). Used for inserting control characters (STX, for example) in the print stream.	
<DA>	Date	
<TD>	Time & Date	
<H1>	Header 1	
<H2>	Header 2	
<IDC>	Loaded ID Code - 32 characters maximum	
<IDD>	Loaded ID Description - 32 characters maximum	
<IDLC>	Loaded ID Location - 12 characters maximum	
<IDP>	Loaded ID Part Number - 32 characters maximum	
<IDLT>	Loaded ID Lot - 32 characters maximum	
<IDU>	Loaded ID Units - 1 character maximum	
<IDT>	Loaded ID Tare - 9 characters maximum (range 0.0 to 9999999.0)	
<IDW>	Loaded ID Unit Weight - 9 characters maximum (range 0.0 to 9999999.0)	
<IDQ>	Loaded ID Quantity - 11 characters maximum (range -2000000000 to 2000000000)	
<TTLV>	Totalization Value - 11 character maximum (range -2000000000 to 2000000000). When not in totalization mode, the value will be 0.	
<TTLC>	Totalization Count - 4 characters maximum. When not in totalization mode, the value will be 0.	
<TTLW>	Print totalized weight. When not in totalization mode, the value will be 0.	
<WA>	Suppresses all (units, decimal, leading, spaces)	
<WLU>	Supress units	
<WU>	Supress leading spaces	

Table 7-1. Print Format Commands

Command	Description	Supported Ticket Formats
<WL>	Suppress units. Toggle weight data format (formatted/unformatted)**	GFMT, NFMT, TOTALFMT, PALFMT, CFMT, ACCFMT HDRFMT1, HDRFMT2
<SU> or <WA>	Supress units and lead spaces	
<U>	Outputs K (kg) or L (lb) or O (oz).	
<SCV>	Setpoint captured weight value	SPFMT
<SN>	Setpoint weight number	
<STV>	Setpoint target weightvalue	
<SPV>	Setpoint preact weight value	
<SPM>	Setpoint weight mode	
<SCVC>	Setpoint captured count value	
<STVC>	Setpoint target count value	
<SPVC>	Setpoing preact count value	
Gross, net, and tare weights are 8 digits in length, including sign and decimal point, followed by a space and a one- to five-digit units identifier. Total field length with units identifier is 10-14 characters. Depending on what units are configured, the units identifier will be lb, oz, g, or kg.		
Gross, net, tare, and accumulator weights can be printed in any configured weight units by adding the following modifiers to the gross, net, tare, and accumulator weight commands: /P (primary units), /D (displayed units), /S (secondary units), /T (tertiary units). If not specified, the current displayed units (/D) is assumed. Example: To format a ticket to show net weight in secondary units, use the following command: <N/S>.		
UNIT ID and consecutive number (CN) fields are 1–6 characters in length, as required.		
* If *nn* is not specified, 1 is assumed. Value must be in the range 1–99.		
** After receiving an WA command, the indicator sends unformatted data until the next WA command is received. Unformatted data omits decimal points, leading and trailing characters.		

Table 7-1. Print Format Commands

Format	Default Format String	Used When
NFMT	N<NL>A30,75,0,4,1,1,N,"Gross: <G>"<NL>B30,115,0,3,2,4,101,B,"<G>"<NL>A30,300,0,4,1,1,N, "Tare: <T>"<NL>B30,340,0,3,2,4,101,B,"<T>"<NL>A30,525,0,4,1,1,N, "Net: <N>"<NL>B30,565,0,3,2,4,101,B,"<N>"<NL>A30,806,0,3,1,1,N,"<TD>"<NL> P1<NL>	Normal mode, tare in system
PALFMT	N<NL>A416,25,1,4,1,1,N,"ID CODE: <IDC>"<NL>B378,25,1,3,2,4,51,N,"3<IDC>"<NL>A296,28,1,4,1,1,N,"Total QTY: <C>"<NL>B264,22,1,3,2,4,51,N,"<C>"<NL> A179,25,1,4,1,1,N,"Part Name: <IDD>"<NL>A126,25,1,4,1,1,N,"Part Number: <IDP>"<NL>A73,25,1,4,1,1,N,"Lot Number: <IDLT>"<NL>P1<NL>	When Print Pallet softkey is pressed
CFMT	N<NL>B371,20,1,3,2,4,51,N,"3<IDC>"<NL>A410,20,1,4,1,1,N,"ID. CODE: <IDC>"<NL>A302,22,1,4,1,1,N,"QTY: <C>"<NL>B264,20,1,3,2,4,51,N,"<C>"<NL>A280,400,1,4,1,1,N,"GROSS <G>"<NL> A225,400,1,4,1,1,N,"TARE <T>"<NL>B189,355,1,3,2,4,51,N,"4<T>"<NL>A120,400,1,4,1,1,N,"NET <N>"<NL>A195,24,1,4,1,1,N,"WT/K OR U W"<NL>B124,20,1,3,2,4,51,N,"1<IDW>"<NL> A47,16,1,4,1,1,N,"<TD>"<NL>A160,24,1,4,1,1,N,"<IDW>"<NL>P1<NL>	Count mode
GFMT	N<NL>A376,47,1,4,4,3,N”G<G>”<NL>B233,73,1,3,2,4,101,B”<G>”<NL>A73,77,1, 4,1,1,N”<TD>”<NL>P1<NL>	Normal mode, no tare in system
TOTAL	N<NL>A410,32,1,5,2,1,N,"<TOTAL QUANTITY>"<NL>A57,532,1,3,1,1,N,"<TD>"<NL>A309,39,1,5,2,1,N,"<TTLV>"<NL >B195,32,1,3,2,4,101,N,"<TV>"<NL> A61,32,1,5,1,1,N,"BOX COUNT: <TTLC>"<NL>P1<NL>	Totalization mode
SPFMT	N<NL>A274,53,1,2,3,3,N,”<IDD>”<NL>B421,55,1,3,1,2,96,B,”<IDC>”<NL>A96,49, 1,1,4,4,N,”QTY<SCVC>”<NL>P1<NL>	Setpoint mode
ACCFMT	N<NL>A410,32,1,5,2,1,N,"TOTAL QUANTITY"<NL>A57,532,1,3,1,1,N,"<TD>"<NL>A309,39,1,5,2,1,N,"<A>"<NL>B19 5,32,1,3,2,4,101,N,"<AC>"<NL> A61,32,1,5,1,1,N,"ACCUMULATIONS: <AC>"<NL>P1<NL>	Accumulator enabled and displayed

Table 7-2. Default Print Formats

Note ***The 500-character limit of each print format string includes the output field length of the print formatting commands, not the command length. For example, if the indicator is configured to show a decimal point, the <G> command generates an output field of 13 characters: the 10-character weight value (including decimal point), one space, and a two-digit units identifier. The two header formats as limited to 100 characters each.***

The default *Counterpart* print formats are shown in Table 7-2 and Table 7-3:

Format	Default Format String	Sample Output
H1	Company Name <NL> Street Address <NL> City, ST ZIP <NL2>	Company Name, Street Address, City, ST ZIP
H2	Company Name <NL> Street Address <NL> City, ST ZIP <NL2>	Company Name, Street Address, City, ST ZIP

Table 7-3. H1, H2 Formats

7.2 Customizing Print Formats

The following sections describe procedures for customizing the ***GFMT***, ***NFMT*** and ***CFMT*** formats using the EDP port, the front panel (***PFORMT*** menu), and the *Revolution*® configuration utility.

7.2.1 Using the EDP Port

With a personal computer, terminal, you can use the EDP command set to customize the print format strings.

To view the current setting of a format string, type the name of the string (***GFMT.FMT*** or ***NFMT.FMT***) and press **TARE (Enter)**. For example, to check the current configuration of the ***GFMT.FMT*** format, type ***GFMT.FMT*** and press **ENTER**. The indicator responds by sending the current configuration for the gross format:

GFMT.FMT=<G> GROSS<NL>

To change the format, use the ***GFMT.FMT*** or ***NFMT*** EDP command followed by an equals sign (=) and the modified print format string. For example, to add the name and address of a company to the gross format, you could send the following EDP command:

Note ***Indicator must be placed in the configuration mode with CONFIG shown on the display.***

GFMT.FMT=FINE TRANSFER CO<NL>32400 WEST HIGHWAY ROAD<NL>SMALLTOWN<NL2><G> GROSS<NL>

A ticket printed using this format might look like the following:

FINE TRANSFER CO
32400 WEST HIGHWAY ROAD
SMALLTOWN

1345 lb GROSS

7.2.2 Using the Front Panel

If you have no access to equipment for communication through the EDP port or are working at a site where such equipment cannot be used, you can use the ***PFORMT*** menu (see Figure 7-1) to customize the print formats.

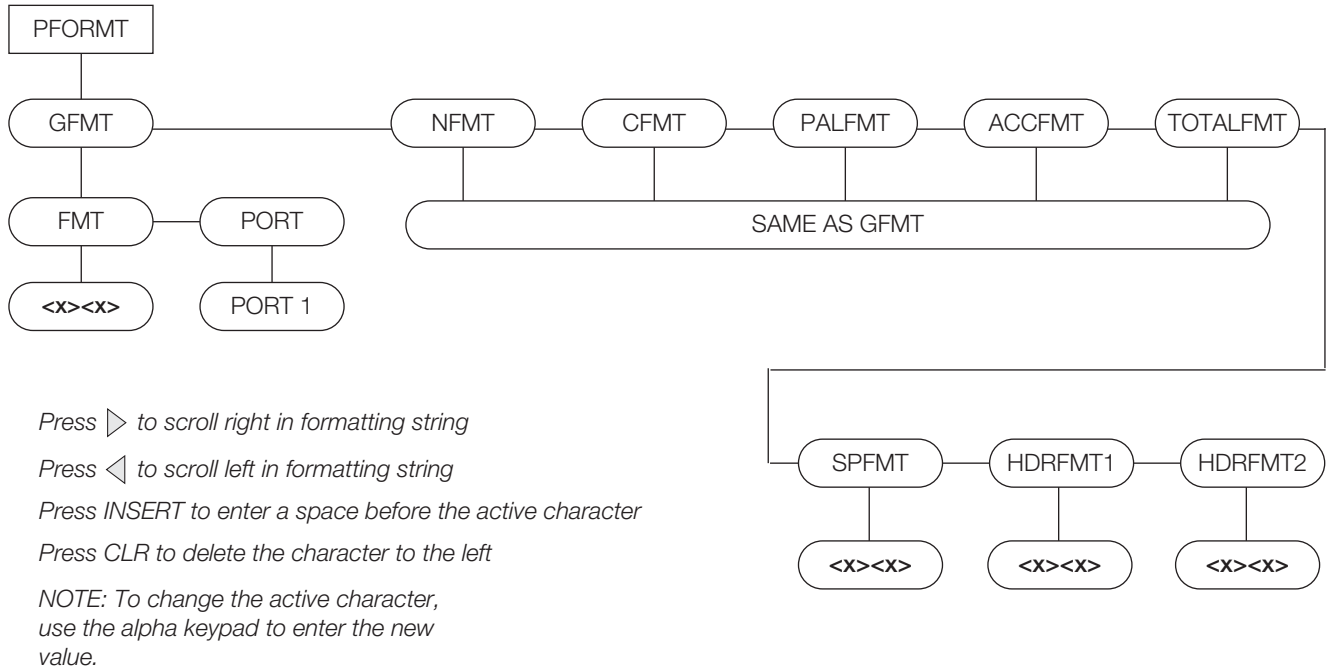


Figure 7-1. PFORMT Menu, Showing Alphanumeric Character Entry Procedure

7.2.3 Using Revolution®

The *Revolution* configuration utility provides a print formatting grid with a tool bar. The grid allows you to construct the print format without the formatting commands (<NL> and <SP>) required by the front panel or EDP command methods. Using *Revolution*, you can type text directly into the grid, then select weight value fields from the tool bar and place them where you want them to appear on the printed ticket.

Figure 7-2 shows an example of the *Revolution* print formatting grid.

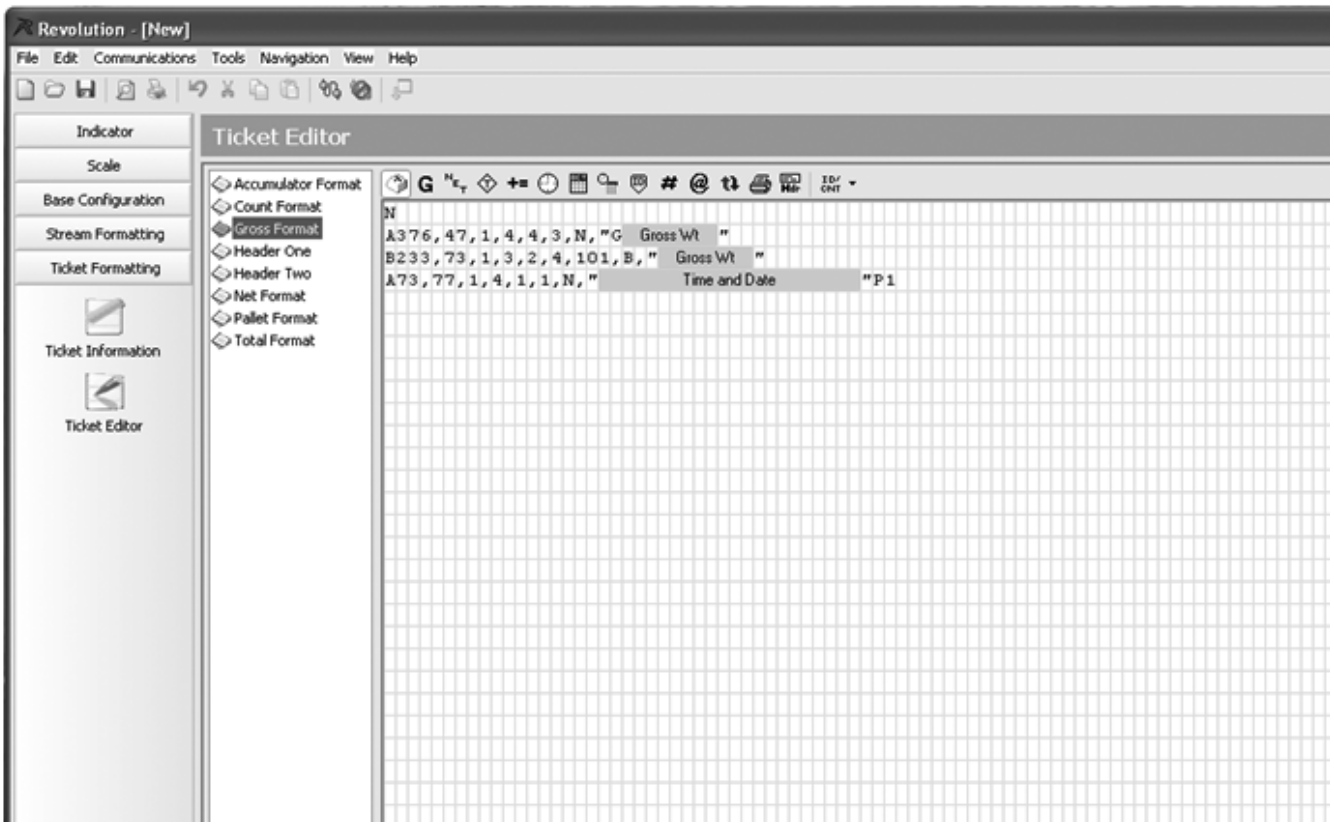


Figure 7-2. Revolution Print Format Grid

7.2.4 Print Label Examples

Listed below are print formatting examples (using the default formats) that appear with the various formats.

Count Format

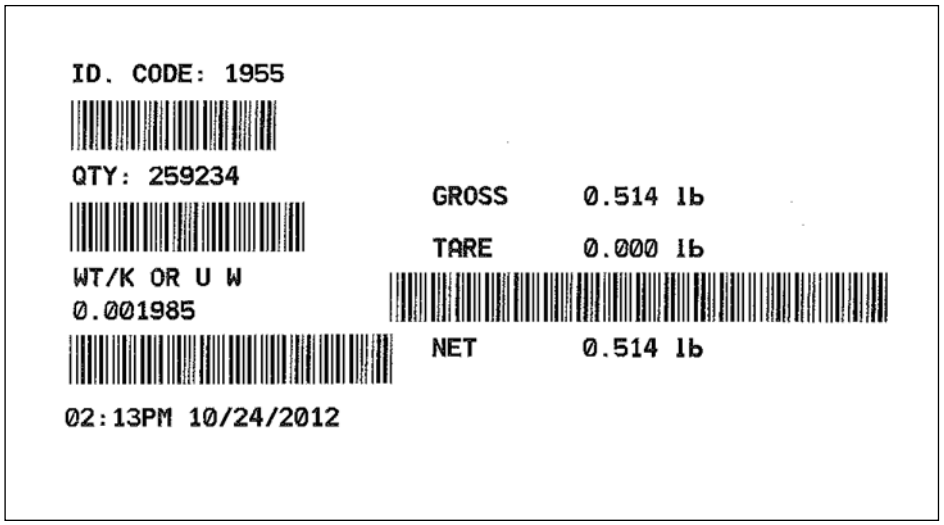


Figure 7-3. Count Format Label Example

Pallet Label Format

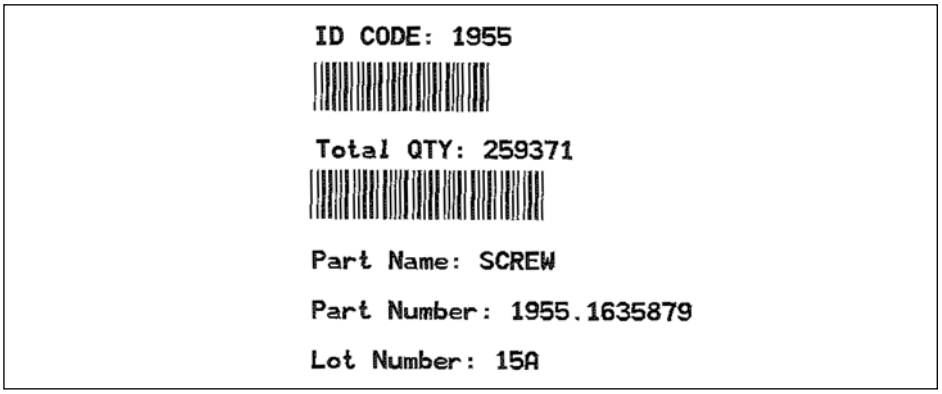


Figure 7-4. Pallet Format Label Example

Gross Label Format

Figure 7-5. Gross Label Format

Setpoint Format

Figure 7-6. Setpoint Label Format

Total Label Format

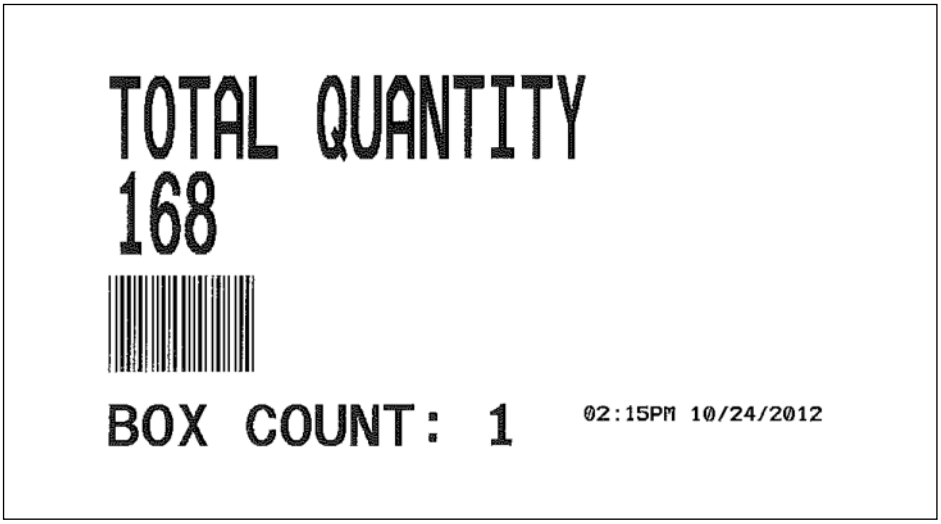


Figure 7-7. Total Format Label Example

Gross/Tare/Net Label Format

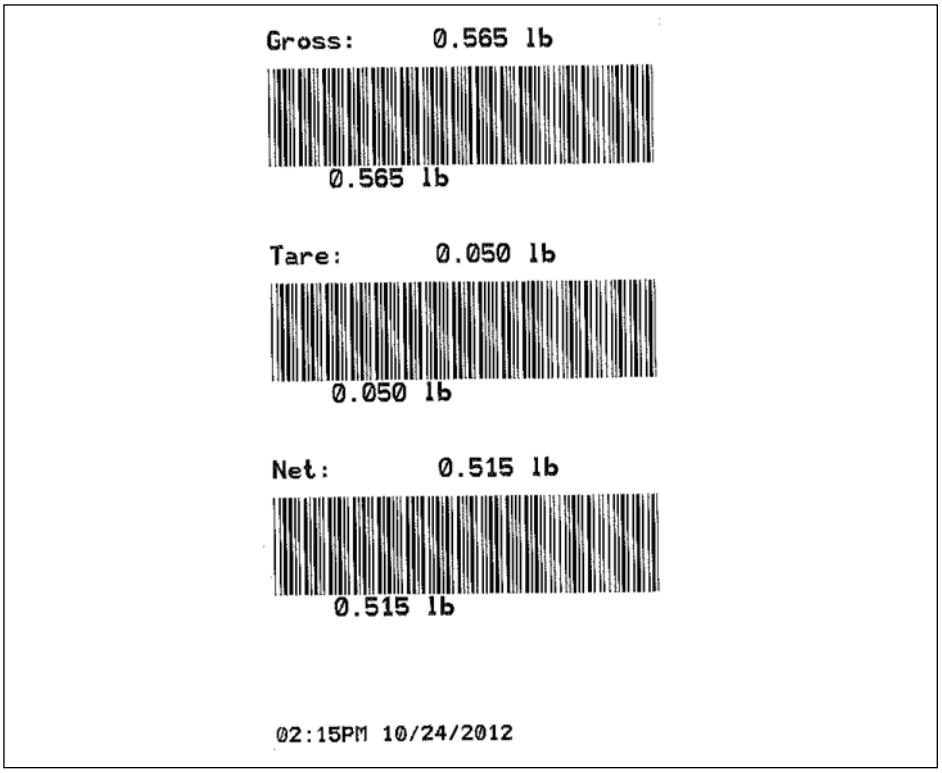


Figure 7-8. Gross/Tare/Net Label Format

Accum Label Format

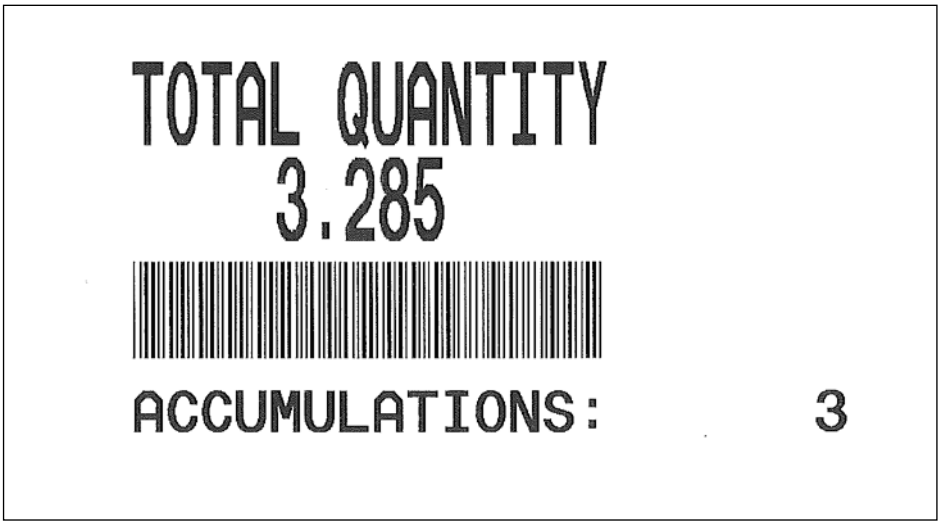


Figure 7-9. Accum Label Format

8.0 WLAN Installation Instructions

Note *Before installing this option, contact your IT administrator to obtain network communication protocol codes and have a RS-232 communications cable or regular comm port cable available to run between your PC and the indicator while installing and setting up the wireless network.*

The optional Lantronix® WiPort™ (WLAN — Wireless Local Area Network) wireless networking device can be installed inside the *Counterpart* for real-time data transmission to warehouse management systems. The Windows®-based configuration software, DeviceInstaller™ is required for installation and setup and is available on the CD that comes with the kit. The WLAN option can be factory installed or can be purchased separately and installed on site.

The wireless LAN option comes in a kit containing the following items:

- Pluggable wireless board (PN 125787)
- Antenna (PN 98357)
- Standoffs (PN 95356)
- CD containing Lantronix information (PN 72763)

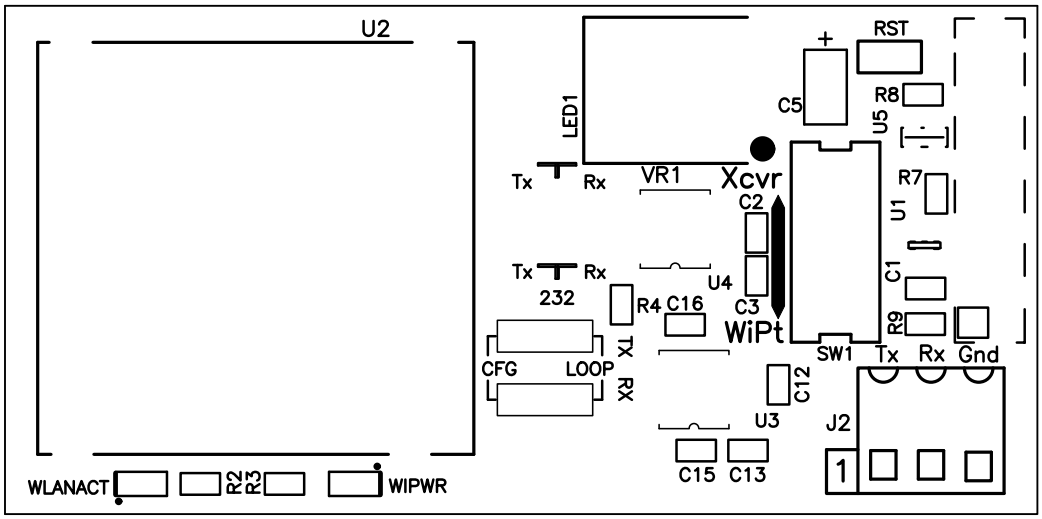


Figure 8-1. WLAN Board

8.1 Enclosure Disassembly

The indicator enclosure must be opened to install the WLAN option card and antenna and to connect cables for the installed option card.

WARNING ***Before opening the unit, be sure the power cord is disconnected from the power outlet.***

1. Disconnect power to the indicator.
2. Place the indicator face-down on an antistatic work mat.
3. Remove the screws that hold the backplate to the enclosure body and then lift the backplate away from the enclosure and set it aside.

8.2 WLAN Card Installation

1. Refer to *CW-90/90X, 720i, 820i, iQUBE2, LaserLT WLAN Installation Instructions* PN 108680 included with the WLAN option card for installation and configuration instructions.
2. This card assumes serial port 2 — the port 2 terminal on the Counterpart CPU board should not be connected to any other device.

9.0 Appendix

9.1 Error Messages

If an error code appears on the display, use the information in Table 9-1 as a troubleshooting guide. If you cannot clear the error, call RLWS Service for assistance.

Error Display	Description	Solution
	Over range	• Check load cell wiring, including sense jumpers. • Check configuration, including number of grads, channel selection, display divisions. • Check calibration, including W ZERO and WSPAN values. • Under range can be caused by OIML setting and weight less than -20 display divisions. • Check for scale binding or damage. • Check for proper excitation voltage. • Call RLWS Service for assistance.
	Under range	
	A/D out of range	
CHKERR - BATTERY BACK LOST	Battery Error	Press ENTER after replacing the battery to restore defaults to battery backed storage.
ERROR	Internal program error	Check configuration. Run XE command (see Section 9.2 on page 90) to determine error type. Call RLWS Service if unable to clear error by cycling power or if error reoccurs.
HWFERR	Hardware error	Reboot the unit. Call RLWS Service if unable to clear error by cycling power or if error reoccurs.
INVALID UNITS	ID uses unassigned units	Modify the ID to use a configured unit.
NOTARE	Tare is prevented	Change regulatory mode settings or the TAREFN parameter.
OVERFL	Overflow error	Weight value too large to be displayed.
RANGE	GRADS > 100,000 WVAL > 100,000	Only shows up in Config mode.
EEPERR	EEPROM error	Call Rice Lake Weighing Systems (RLWS) for service
VERSION UPDATED	Core has been updated or memory has been corrupted.	Press the ENTER key. If the message persists, call RLWS for service.

Table 9-1. Counterpart Error Messages

9.2 Using the XE and XEH EDP Commands

The XE and XEH EDP commands can be used to remotely query the *Counterpart* for the error conditions shown on the front panel. The XE command returns a 5-digit number in the format:

xxxxx

where *xxxxx* contains a decimal representation of any existing error conditions as described in Table 9-2.

The XEH command returns a value in the format:

0xnnnnnnnn

where nnnnnnnn contains a hexadecimal representation of any existing conditions as described in Table 9-2.

If more than one error condition exists, the number returned is the sum of the values representing the error conditions. For example, if the XE command returns the number 1040, this value represents the sum of an A/D reference error (1024) and an A/D calibration checksum error (16).

XE Error Code (decimal)	Description	XEH Error Code (hexadecimal)
1	VIRGERR	0x00000001
2	PARMCHKERR	0x00000002
4	LOADCHKERR	0x00000004
8	PRINTCHKERR	0x00000008
16	ENVRAMERR	0x00000010
32	ENVCRCERR	0x00000020
64	BATTERYERR	0x00000040
32768	GRAVERR	0x00008000
65536	ADPHYSICALERR	0x00010000
131072	TAREERR	0x00020000
262144	EACCOVER	0x00040000
524288	STRINGERR	0x00080000
1048576	RESERVED_PF	0x00100000
2097152	RTCERR	0x00200000
4194304	MISSINGHWERR	0x00400000
8388608	CFGCONFLICTERR	0x00800000
16777216	UNRECOVERABLEERR	0x01000000
0x10000 - 0x80000000		Reserved

Table 9-2. Error Codes Returned on XE Command

9.2.1 Using the P EDP Command

The **P** EDP command returns the current displayed weight value to the EDP port.

9.3 Continuous Output (Stream) Format

Figure 9-1 shows the default continuous output format sent to a Counterpart port when that port's STREAM parameter (SERIAL menu) is set to LFT.

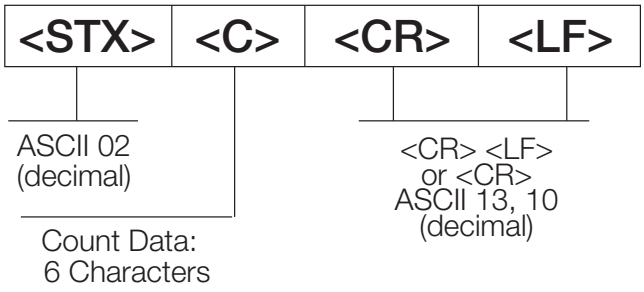


Figure 9-1. Continuous Output Data Format

9.4 Demand Output Serial Data Format

When demand mode is configured for the serial port (STREAM parameter set to OFF), the *Counterpart* uses a data string formatted for a basic ticket printout. The particular ticket format printed depends on the indicator configuration.

You can customize the ticket to work with a wide variety of printers, scoreboard displays, and other remote equipment. See Section 7.0 on page 79 for more information on custom print formats.

9.5 Custom Stream Formatting

Each port can be independently configured to stream a default frame format or can be customized to stream a user-defined format. Custom formatting is very similar to the standard print formatting described in Section 7.0 on page 79. Table 9-3 lists the format identifiers used to configure a custom stream format.

Format Identifier	Defined By	Description
<P[G | N | T]>	STR.POS#*n* STR.NEG#*n*	Polarity. Specifies positive or negative polarity for the current or specified (Gross/Net/Tare) weight on the source scale. Possible values are SPACE, NONE, + (for STR.POS), or – (for STR.NEG)
<CU>	STR.PRI#*n* STR.SEC#*n* STR.TER#*n*	Units. Specifies primary, secondary, or tertiary units for the current or specified weight on the source scale.
<U[P | S | T]>	Dynamic	=L if Units = LB =K if Units = KG =G if Units = G =O if Units = OZ
<M[G | N | T]>	STR.GROSS#*n* STR.NET#*n* STR.TARE#*n*	Mode. Specifies gross, net, or tare weight for the current or specified weight on the source scale.
<S>	STR.MOTION#*n* STR.RANGE#*n* STR.OK#*n* STR.INVALI#*n*	Status for the source scale. Default values and meanings for each status: STR.MOTIONMIn motion STR.RANGEOOut of range STR.OK<*space*>OK STR.INVALIDIInvalid
<C>	-	Piece count for the currently viewed scale
<B [–]n,…>	*See descriptions below*	Bit fields. Comma-separated sequence of bit field specifiers. Must be exactly 8 bits. Minus sign (–) inverts the bit.
B0		Always 0
B1		Always 1

Table 9-3. Custom Stream Formatting

Format Identifier	Defined By	Description
B2	Configuration	=1 if even parity
B3	Dynamic	=1 if MODE=NET
B4	Dynamic	=1 if COZ
B5	Dynamic	=1 if standstill
B6	Dynamic	=1 if gross negative
B7	Dynamic	=1 if out of range
B8	Dynamic	=1 if secondary/tertiary
B9	Dynamic	=1 if tare in system
B10	Dynamic	=1 if tare is keyed
B11	Dynamic	=00 if MODE = GROSS =01 if MODE = NET =10 if MODE = TARE =11 (*not used*)
B12	Dynamic	=00 if UNITS = PRIMARY =01 if UNITS = SECONDARY =10 if UNITS = TERTIARY =11 (*not used*)
B13	Configuration	=00 (*not used*) =01 if current DSPDIV = 1 =10 if current DSPDIV = 2 =11 if current DSPDIV = 5
B14	Configuration	=00 (*not used*) =01 if primary DSPDIV = 1 =10 if primary DSPDIV = 2 =11 if primary DSPDIV = 5
B15	Configuration	=00 (*not used*) =01 if secondary DSPDIV = 1 =10 if secondary DSPDIV = 2 =11 if secondary DSPDIV = 5
B16	Configuration	=00 (*not used*) =01 if tertiary DSPDIV = 1 =10 if tertiary DSPDIV = 2 =11 if tertiary DSPDIV = 5
B17	Configuration	=000 if current DECPNT = 8888800 =001 if current DECPNT = 8888880 =010 if current DECPNT = 8888888 =011 if current DECPNT = 888888.8 =100 if current DECPNT = 88888.88 =101 if current DECPNT = 8888.888 =110 if current DECPNT = 888.8888 =111 if current DECPNT = 88.88888
B18	Configuration	=000 if primary DECPNT = 8888800 =001 if primary DECPNT = 8888880 =010 if primary DECPNT = 8888888 =011 if primary DECPNT = 888888.8 =100 if primary DECPNT = 88888.88 =101 if primary DECPNT = 8888.888 =110 if primary DECPNT = 888.8888 =111 if primary DECPNT = 88.88888

Table 9-3. Custom Stream Formatting

Format Identifier	Defined By	Description
B19	Configuration	=000 if secondary DECPNT = 8888800 =001 if secondary DECPNT = 8888880 =010 if secondary DECPNT = 8888888 =011 if secondary DECPNT = 888888.8 =100 if secondary DECPNT = 88888.88 =101 if secondary DECPNT = 8888.888 =110 if secondary DECPNT = 888.8888 =111 if secondary DECPNT = 88.88888
B20	Configuration	=000 if tertiary DECPNT = 8888800 =001 if tertiary DECPNT = 8888880 =010 if tertiary DECPNT = 8888888 =011 if tertiary DECPNT = 888888.8 =100 if tertiary DECPNT = 88888.88 =101 if tertiary DECPNT = 8888.888 =110 if tertiary DECPNT = 888.8888 =111 if tertiary DECPNT = 88.88888
<*wspec* [–] [0] *digit*[[.]*digit*]>	Scale weight	Weight for the source scale. *wspec* is defined as follows: *wspec* Indicates whether the weight is the current displayed weight (W, w), gross (G, g), net (N, n), or tare (T, t) weight. Upper-case letters specify right-justified weights; lower-case are left-justified. Optional /P, /S, or /T suffixes can be added before the ending delimiter (>) to specify weight display in primary (/P), secondary (/S), or tertiary (/T) units. [–] Enter a minus sign (–) to include sign for negative values. [0] Enter a zero (0) to display leading zeroes. *digit*[[.][.]*digit*] The first digit indicates the field width in characters. Decimal point only indicates floating decimal; decimal point with following digit indicates fixed decimal with *n* digits to the right of the decimal. Two consecutive decimals send the decimal point even if it falls at the end of the transmitted weight field.
<CR>		Carriage return
<LF>		Line feed

Table 9-3. Custom Stream Formatting

9.6 Digital Filtering

The *Counterpart* uses averaged digital filtering to reduce the effect of vibration on weight readings. Adjustable threshold and sensitivity functions allow quick settling by suspending filter averaging, allowing the weight reading to jump to the new value. Figure 9-2 shows the digital filter parameters on the CONFIG menu.

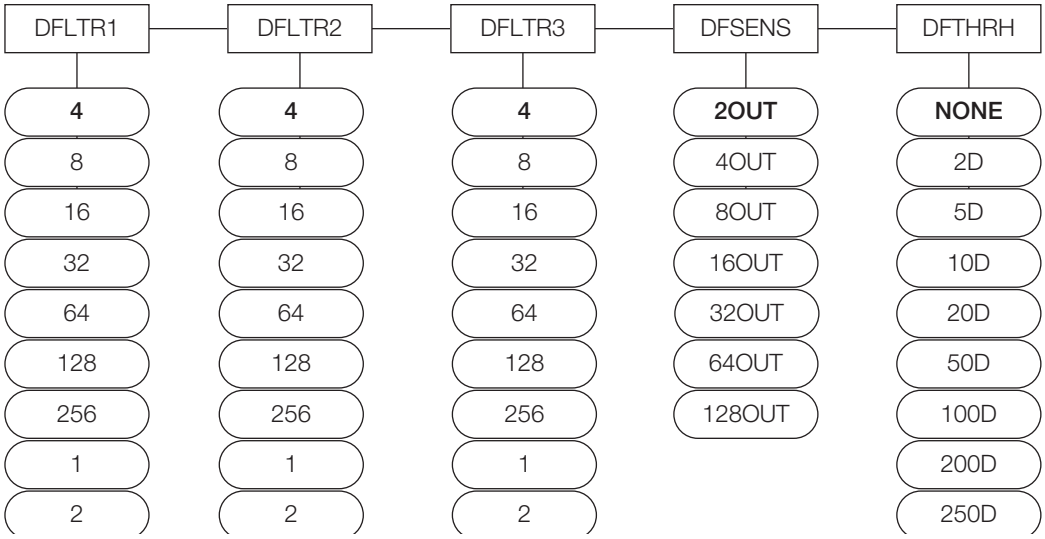


Figure 9-2. Digital Filtering Parameters on the Configuration (CONFIG) Menu

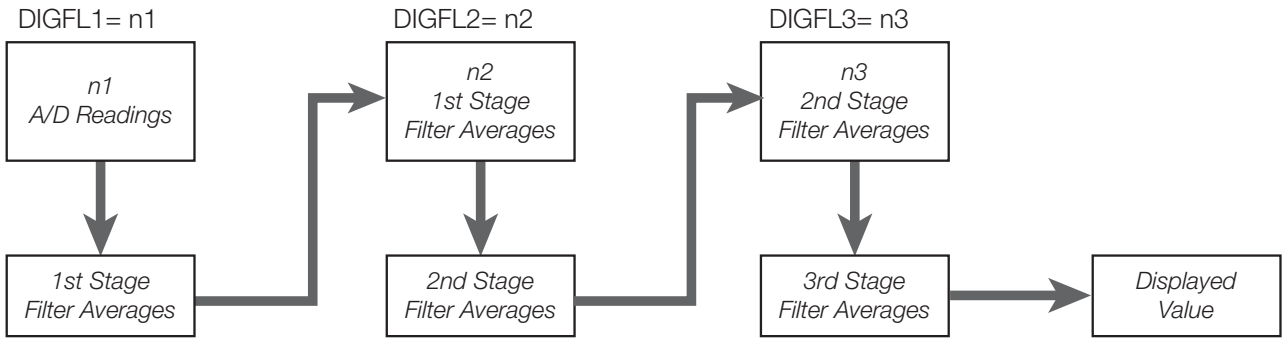


Figure 9-3. Flow Diagram for Counterpart Digital Filters

9.6.1 DIGFLx Parameters

The first three digital filtering parameters, DFLTR1, DFLTRL2, and DFLTR3, are configurable filter stages that control the effect of a single A/D reading on the displayed weight. The value assigned to each parameter sets the number of readings received from the preceding filter stage before averaging (see Figure 9-3).

The overall filtering effect can be expressed by adding the values assigned to the three filter stages:

DFLTR1 + DFLTR2 + DFLTR3

For example, if the filters are configured as DFLTR1=4, DFLTR2=8, DFLTR3=8, the overall filtering effect is 20 (4 + 8 + 8). With this configuration, each A/D reading has a 1-in-20 effect on the displayed weight value. Setting the filters to 1 effectively disables digital filtering.

9.6.2 DFSENS and DFTHRH Parameters

The three digital filters can be used by themselves to eliminate vibration effects, but heavy filtering also increases settling time. The DFSENS (digital filter sensitivity) and DFTHRH (digital filter threshold) parameters can be used to temporarily override filter averaging and improve settling time:

- DFSENS specifies the number of consecutive scale readings that must fall outside the filter threshold (DFTHRH) before digital filtering is suspended.
- DFTHRH sets a threshold value, in display divisions. When a specified number of consecutive scale readings (DFSENS) fall outside of this threshold, digital filtering is suspended. Set DFTHRH to NONE to turn off the filter override.

9.6.3 Setting the Digital Filter Parameters

Fine-tuning the digital filter parameters greatly improves indicator performance in heavy-vibration environments. Use the following procedure to determine vibration effects on the scale and optimize the digital filtering configuration.

1. In menu mode, set all three digital filters (DFLTR1, DFLTRL2, DFLTR3) to 1. Set DFTHRH to NONE. Return indicator to normal mode.
2. Remove all weight from the scale, then watch the indicator display to determine the magnitude of vibration effects on the scale. Record the weight below which all but a few readings fall. This value is used to calculate the DFTHRH parameter value in Step 4.

   For example, if a heavy-capacity scale produces vibration-related readings of up to 50 lb, with occasional spikes to 75 lb, record 50 lb as the threshold weight value.
3. Place the indicator in menu mode and set the digital filters (DFLTR*x*) to eliminate the vibration effects on the scale. (Leave DFTHRH set to NONE.) Reconfigure as necessary to find the lowest effective values for the DFLTR*x* parameters.
4. With optimum values assigned to the DFLTR*x* parameters, calculate the DFTHRH parameter value by converting the weight value recorded in Step 2 to display divisions:

   threshold_weight_value / DSPDIV

   In the example in Step 2, with a threshold weight value of 50 lb and a display division value of 5lb: *50 / 5lb = 10DD.* DFTHRH should be set to 10DD for this example.
5. Finally, set the DFSENS parameter high enough to ignore transient peaks. Longer transients (typically caused by lower vibration frequencies) will cause more consecutive out-of-band readings, so DFSENS should be set higher to counter low frequency transients.

   Reconfigure as necessary to find the lowest effective value for the DFSENS parameter.

9.6.4 Audit Trail Support

Audit trail support provides tracking information for configuration and calibration events. To prevent potential misuse, all configuration and calibration changes are counted as change events.

Use the Audit menu or Revolution to display audit trail information. This includes the legally relevant (LR) version number (software version for the code that provides audit trail information), a calibration count and a configuration count.

Audit trail information can be printed from Revolution or by sending the DUMPAUDIT serial command.

9.7 USB Keyboard Interface

The USB interface option board provides a type-A connection for a USB keyboard interface. To use the keyboard interface, set the serial input function for Port 3 (found under the SERIAL menu — see Figure 3-22 on page 51) to KEYBOARD.

Table 9-4 summarizes the Counterpart specific functions provided by the keyboard interface, most other alphanumeric and navigational keys provide functions equivalent to those typical for PC operation. Menu parameters and serial commands that affect the indicator keypad operation (including KBDLCK, ZERONLY, and KLOCK serial commands also affect the remote keyboard.

Key	Function
F1	Softkey 1
F2	Softkey 2
F3	Softkey 3
F4	Softkey 4
F5	Unit Weight key
F6 (Alt + z)	ZERO key
F7 (Alt + g)	GROSS/NET key
F8 (Alt + t)	TARE key
F9 (Alt + u)	UNITS key
F10 (Alt + p)	PRINT key
F11	*Not used*
F12	MENU key
Print Screen	PRINT key

Table 9-4. USB Keyboard Functions

Note

- The keyboard interface is hot-pluggable.
- Caps lock is functional (off at indicator power up).
- Num lock is on and cannot be turned off.
- Scroll lock is not supported.
- Other USB devices are not supported.

9.8 Serial Scale Interface

Serial port 1 can be configured for serial scale input. The serial scale function allows other scale indicators to send gross, or net weight data to *Counterpart*. Once the serial port has been configured to accept scale data, the data format can be customized to match the data stream sent by that indicator. See Figure 3-22 on page 51 for setup information.

To set up and configure a serial scale:

1. Under the SERIAL menu, select Port 1 and scroll over to IND SC (industrial serial scale) or SCALE (Legal-for-Trade), depending on what is required. This enables Scale 3. For operation with the counting functions, set type to IND SC.
2. Match the baud rates (9600), data bits and parity, and stop bits. This becomes SCALE 3.
3. Set the format under the SFMT parameter to match the format sent by the serial scale.

   An example of the default serial scale format is:

   <STX><P><W7><U><M><S><CR>

Where:

<STX> STX character
<P> Polarity
<W7> Seven characters of net data with decimal pt
<U> Units
<M> Mode
<S> Status
<CR> Carriage return

Note that industrial serial scales (IND SC) do not require the <M>, <U> and <S> identifiers. However, the units and number of decimal places must be specified. Units can be selected from the FORMAT menu; decimal places should be indicated with a w-spec identifier. For example, a seven-digit weight reading requiring two decimal places should be specified as <W7.2> rather than <W7>.

To change or match formats, use the same path to change formats.

9.9 Regulatory Mode Functions

The function of the front panel **TARE** and **ZERO** keys depends on the value specified for the REGULAT parameter on the FEATURE menu. Table 9-5 describes the function of these keys for the NTEP, CANADA, OIML, and NONE regulatory modes. **TARE** and **ZERO** key functions are configurable when the REGULAT mode is set to INDUST (see Table 9-6 on page 97).

REGULAT Parameter Value	Weight on Scale	Tare in System	Front Panel Key Function	
			TARE	ZERO
NTEP	zero or negative	no	*no action*	ZERO
		yes	CLEAR TARE	
	positive	no	TARE	
		yes	TARE	
CANADA	zero or negative	no	*no action*	ZERO
		yes	CLEAR TARE	
	positive	no	TARE	
		yes	*no action*	
OIML	zero or negative (not to exceed -20dd)	no	*no action*	ZERO
		yes	CLEAR TARE	ZERO *and* CLEAR TARE
	positive	no	TARE	ZERO
		yes	TARE	ZERO *and* CLEAR TARE if weight is within ZRANGE. *No action* if weight is outside of ZRANGE
NONE	zero or negative	no	TARE	ZERO
		yes	CLEAR TARE	
	positive	no	TARE	
		yes	CLEAR TARE	

Table 9-5. TARE and ZERO Key Functions for REGULAT Parameter Settings

Table 9-6 lists the subparameters available when configuring a scale using INDUST mode. The table includes the default values of the INDUST subparameters and the effective (not configurable) values used by the NTEP, CANADA, OIML, and NONE regulatory modes.

REGULAT / INDUST Parameter		REGULAT Mode				
Parameter Name	Text Prompt	INDUST	NTEP	CANADA	OIML	NONE
SNPSHOT	Display or Scale weight source	DISPLAY	DISPLAY	DISPLAY	DISPLAY	SCALE
ZTARE	Remove tare on ZERO	NO	NO	NO	YES	NO
KTARE	Always allow keyed tare	YES	YES	NO	YES	YES
MTARE	Multiple tare action	REPLACE	REPLACE	NOTHING	REPLACE	REMOVE
NTARE	Allow negative tare	NO	NO	NO	NO	YES

Table 9-6. REGULAT / INDUST Mode Parameters, Comparison with Effective Values of Other Modes

REGULAT / INDUST Parameter		REGULAT Mode				
Parameter Name	Text Prompt	INDUST	NTEP	CANADA	OIML	NONE
CTARE	Allow CLEAR key to clear tare/ accumulator	YES	YES	NO	NO	YES
PRTMOT	Allow print while in motion	NO	NO	NO	NO	YES
PRTPT	Add PT to keyed tare print	NO	NO	YES	YES	NO
OVRBASE	Zero base for overload calculation	CALIB ZERO	CALIB ZERO	CALIB ZERO	SCALE ZERO	CALIB ZERO

Table 9-6. REGULAT / INDUST Mode Parameters, Comparison with Effective Values of Other Modes (Continued)

9.10 Regulatory Mode and Legal-for-Trade (LFT)

When REGULAT is set for NONE or INDUST there are no restrictions on displaying both the weight and piece count data.

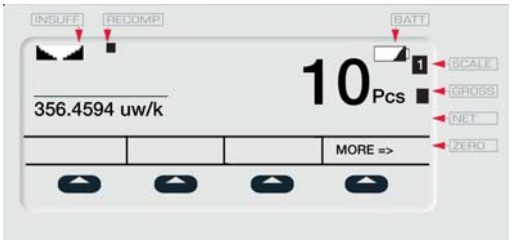
If the unit is going to be used in Legal for Trade applications, weight and piece count data cannot be displayed at the same time. Use the following examples to use Counterpart in Legal for Trade applications.

9.10.1 Legal for Trade and Normal Weight Mode

When in a Legal for Trade mode (REGULAT = NTEP, OIML, or CANADA) and the unit is in normal weigh mode:

- If the weight is displayed in the main area (either as a result of the DSPMODE parameter being set for WEIGHT or the Swap Display softkey was pressed) then the piece count and unit weight are not displayed.

- If the piece count is displayed in the main area (either as a result of the DSPMODE parameter being set for COUNT or the Swap Display softkey was pressed) then the weight is not displayed. The unit weight will be displayed in the left display area.



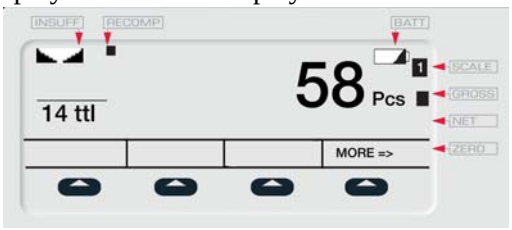
- If the unit weight is displayed in the main area (either as a result of the DSPMODE parameter being set for UNITWEIGHT or the Swap Display softkey was pressed) then the weight is not displayed. The piece count will be displayed in the left display area.

9.10.2 Legal for Trade and Totalization Mode

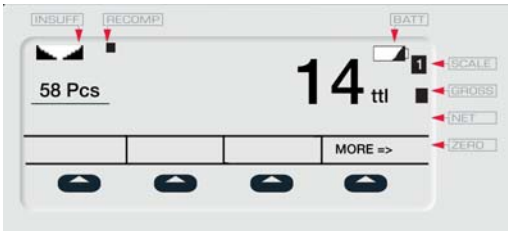
When in Legal for Trade mode (REGULAT = NTEP, OIML, or CANADA) and the unit is in Totalization mode:

- If the weight is displayed in the main area (either as a result of the DSPMODE parameter being set for WEIGHT or the Swap Display softkey was pressed) then the piece count and piece count total are not displayed.

- If the piece count is displayed in the main area (either as a result of the DSPMODE parameter being set for COUNT or the Swap Display softkey was pressed) then the weight is not displayed. The piece count total will be displayed in the left display area.



- If the piece count total is displayed in the main area (either as a result of the DSPMODE parameter being set for UNITWEIGHT or the Swap Display softkey was pressed) then the weight is not displayed. The piece count will be displayed in the left display area.



9.11 Updating Firmware

To update firmware of the *Counterpart*, you must have Revolution installed and a .hex file on your computer. Visit **www.ricelake.com** to download this free configuration software and the latest .hex file.

Note ***If the hex file is the same version as is currently in the indicator, the firmware update will not reset the configuration. This is helpful if the firmware becomes corrupt and you want to reload the same firmware. However, it is always recommended that configuration be backed up in Revolution to avoid any data loss.***

1. Unplug power to the *Counterpart* and remove top from the base of the unit.
2. Wire the serial cable to the *Counterpart*'s Port 1. Refer to Table 9-7 for cable connection settings.

DB9 Cable				Connector (J5)		
Pin/Color	*Signal*	*In/Out*	*Description*	*Pin*	*Description*	*In/Out*
1/Brown	DCD	In	Data carrier detect	NC	NA	NA
2/Red	RxD	In	Receive data	3	Tx	Out
3/Orange	TxD	Out	Transmit data	4	Rx	In
4/Yellow	DTR	Out	Data terminal ready	5	DTR	In
5/Green	GND	--------	Ground	1 or 2	Gnd	
6/Blue	DSR	In	Data set ready	NC	NA	NA
7/Purple	RTS	Out	Request to send	6	RTS	In
8/Gray	CTS	In	Clear to send	NC	NA	NA
9/Black	RI	In	Ring indicator	NC	NA	NA

Table 9-7. Cable Connection Settings

3. Install jumpers on JP5 and JP6. See Table 2-5 on page 16.
4. Plug in power to the *Counterpart* and press the indicator's Power button.
5. With Revolution open, begin a new configuration file for the *Counterpart*.
6. Click ***Update** Counterpart **Firmware***.

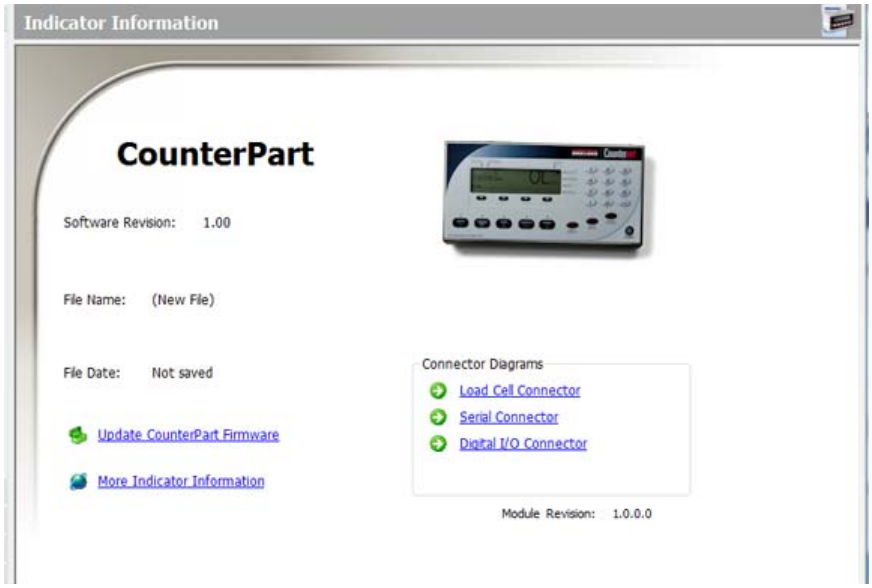


Figure 9-4. Revolution Screen

7. The *Rice Lake Updater* screen appears. Specify the COM port the *Counterpart* is connected to, and click the ellipses (...) to browse to and select the desired .hex file.

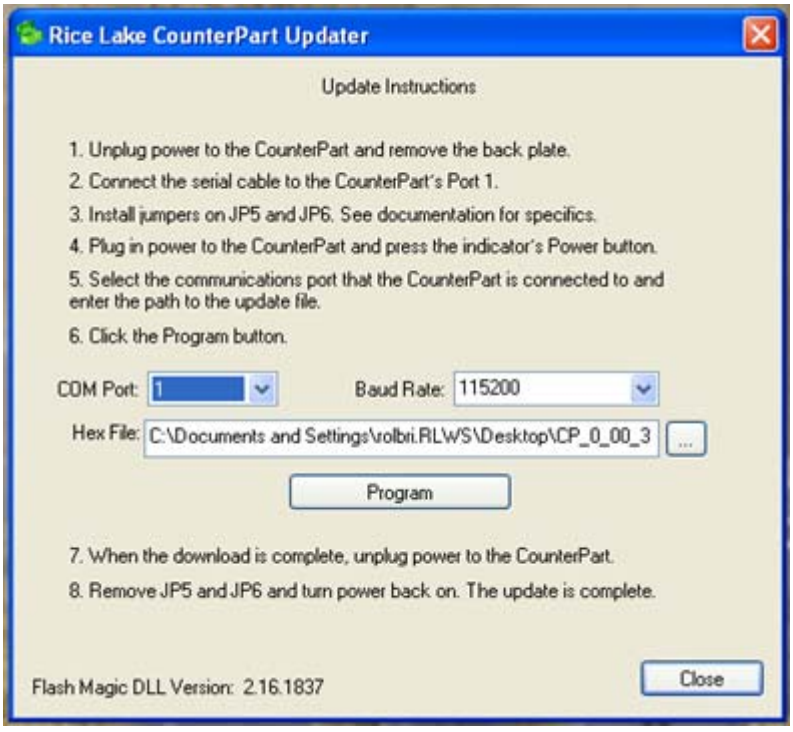

Rice Lake CounterPart Updater
Update Instructions
1. Unplug power to the CounterPart and remove the back plate.
2. Connect the serial cable to the CounterPart's Port 1.
3. Install jumpers on JP5 and JP6. See documentation for specifics.
4. Plug in power to the CounterPart and press the indicator's Power button.
5. Select the communications port that the CounterPart is connected to and enter the path to the update file.
6. Click the Program button.
COM Port: 1
Baud Rate: 115200
Hex File: C:\Documents and Settings\rolbri.RLWS\Desktop\CP_0_00_3
...
Program
7. When the download is complete, unplug power to the CounterPart.
8. Remove JP5 and JP6 and turn power back on. The update is complete.
Flash Magic DLL Version: 2.16.1837
Close

Figure 9-5. Rice Lake Updater Screen

8. Click the **Program** button. The update will take several moments.
9. When complete, remove the jumpers shown in Figure 2-13 on page 15 and press the **Power** button to power up the indicator.

9.12 Specifications

Part #	Description	Weighing Resolution	Platter Dimensions
Single Channel			
118788	CP Indicator	Console only	
120736	CP-5	5 lb x 0.0005 lb (2 kg x 0.0002 kg)	9 in x 12 in
120737	CP-10	10 lb x 0.001 lb (5 kg x 0.0005 kg)	11 in x 16 in
120738	CP-25	25 lb x 0.002 lb (10 kg x 0.001 kg)	11 in x 16 in
120739	CP-50	50 lb x 0.005 lb (20 kg x 0.002 kg)	11 in x 16 in
120740	CP-100	100 lb x 0.01 lb (50 kg x 0.005 kg)	11 in x 16 in
Dual Channel (single platform XL base systems)			
120770	CP dual indicator	Console only	
119796	CP-5	5 lb x 0.0005 lb (2 kg x 0.0002 kg)	9 in x 12 in
118797	CP-10	10 lb x 0.001 lb (5 kg x 0.0005 kg)	11 in x 16 in
118798	CP-25	25 lb x 0.002 lb (10 kg x 0.001 kg)	11 in x 16 in
118799	CP-50	50 lb x 0.005 lb (20 kg x 0.002 kg)	11 in x 16 in
118800	CP-100	100 lb x 0.01 lb (50 kg x 0.005 kg)	11 in x 16 in
Dual Channel with Benchmark			
125113	CP-50BM	50 lb x 0.01 lb (20 kg x 0.002 kg)	12 in x 18 in
125116	CP-100BM	100 lb x 0.02 lb (50 kg x 0.005 kg)	12 in x 18 in

Table 9-8. Specifications

9.13 Specifications

POWER:

Power source:

Input: 100-240VAC, 47-63 Hz, 5 watts, US power cord

Output: 9VDC or 12VDC 1.25 max

EXCITATION VOLTAGE:

5VDC

ANALOG SIGNAL INPUT RANGE:

0-4.5 mV/V

ANALOG SPECIFICATIONS:

.3 μV/V grad minimum

ANALOG SPECIFICATIONS:

Input sensitivity: 1.5 μV/V grad recommended
Zero adjustment range: 0-100% or per region settings
A/D conversion rate: 7.5, 15, 30 samples per second
Load cells per scale: 8 x 350Ω; 16 x 700Ω
Scale channels: 1 or 2
Linearity +/- 0.017 full scale

CIRCUIT PROTECTION:

RFI, EMI, ESD protection

DIGITAL I/O:

4 I/O

DISPLAY:

Viewing Area: 240 x 64 pixels, transmissive VGA
Liquid Crystal Display (LCD) with adjustable contrast

KEYBOARD:

24 buttons, full keypad - alpha numeric

RESOLUTION:

Weight display resolution: up to 100,000 graduations
Counting resolution: 1/1,000,000

SERIAL COMMUNICATIONS AND SETPOINT:

Two RS-232 ports supports up to 115,200 bps
One optional port 3 connector for USB or Ethernet Fiber Optics
Ethernet port
Setpoint output (pending) - serial scale on Port 1 only.

STATUS ENUNCIATORS:

PCS, motion, low battery, insuff, recomp, scale number, gross, net, zero

BATTERY:

Type: Lithium Ion
Charge Time: 6-8 hours
Charge Cycles 400-1200
Estimated Run Time: up to 24 hours

OPERATING TEMPERATURE:

10^{O} F to 104^{O} F (-12^{O} C to 40^{O} C)

OPERATING HUMIDITY:

85%

PHYSICAL DIMENSIONS:

Indicator Only: 12.25 in x 6.25 in x 4.0 in

APPROVALS:

Pending

WARRANTY:

Two-year limited warranty

CERTIFICATIONS AND APPROVALS

Counterpart **Indicator**
NTEP
(Pending)

(Pending)

(Pending)

Counterpart Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for two years.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, *Protecting Your Components From Static Damage in Shipment*, available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

THESE WARRANTIES EXCLUDE ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NEITHER RLWS NOR DISTRIBUTOR WILL, IN ANY EVENT, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

RLWS AND BUYER AGREE THAT RLWS' SOLE AND EXCLUSIVE LIABILITY HEREUNDER IS LIMITED TO REPAIR OR REPLACEMENT OF SUCH GOODS. IN ACCEPTING THIS WARRANTY, THE BUYER WAIVES ANY AND ALL OTHER CLAIMS TO WARRANTY.

SHOULD THE SELLER BE OTHER THAN RLWS, THE BUYER AGREES TO LOOK ONLY TO THE SELLER FOR WARRANTY CLAIMS.

NO TERMS, CONDITIONS, UNDERSTANDING, OR AGREEMENTS PURPORTING TO MODIFY THE TERMS OF THIS WARRANTY SHALL HAVE ANY LEGAL EFFECT UNLESS MADE IN WRITING AND SIGNED BY A CORPORATE OFFICER OF RLWS AND THE BUYER.

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For More Information

Literature

- *Counterpart Sales Literature*, PN 125545
- *Counterpart CD with WeighVault*, PN 125546
- *WeighVault Manual for Counterpart*, PN 125561

Web Site

- Frequently Asked Questions (FAQs) at http://www.ricelake.com/faqs.aspx

Contact Information

Hours of Operation

Knowledgeable customer service representatives are available 6:30 a.m. - 6:30 p.m. Monday through Friday and 8 a.m. to 12 noon on Saturday. (CST)

Telephone

- Sales/Technical Support 800-472-6703
- Canadian and Mexican Customers 800-321-6703
- International 715-234-9171

Immediate/Emergency Service

For immediate assistance call toll-free 1-800-472-6703 (Canadian and Mexican customers please call 1-800-321-6703). If you are calling after standard business hours and have an urgent scale outage or emergency, press 1 to reach on-call personnel.

Fax

Fax Number 715-234-6967

Email

- U.S. sales and product information at prodinfo@ricelake.com
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